



Editorial Notes.

THE BETTS DEFENCE FUND.

WHEN we last wrote about Mr. Betts and his law suits we headed our article "Exit Mr. Betts" in the firm hope that we were finally dismissing him. It is with no particular kindness for him that we again give him prominence. But it is a matter of absolute duty, that we should call the attention of the trade to the present position of affairs. When Mr. Betts first made his attack on the retail trade he selected twenty-five victims for his first meal; and there is good reason to judge that if he had been able to digest these, he would have proceeded still further, taking twenty-five at a time, or perhaps more. We all remember the feeling of relief which was experienced when a committee representing many of the first-class wholesale and retail firms of London, came forward for the protection of the smaller men who would have been otherwise in Mr. Betts' power, and having guaranteed the expenses of a lawsuit, undertook the case, and after six years' litigation brought it to a triumphant conclusion. The Vice-Chancellor condemned the plaintiff in costs, but on appeal the Lords Justices reversed this decision to some extent, and we have now before us the solicitor's bill of charges, to be paid by the defendants. It amounts, all told, to £1,314 2s. 10d., and of this £603 19s. 10d. has been paid, leaving a balance of £710 3s. This sum the guarantors are responsible for; but they have already been severely taxed, and it is less their affair than that of the retail trade. We ask our readers to consider whether it is not a debt of honour which it is their duty to clear off, and we are confident that they will give prompt response. A five-shilling subscription throughout the trade would more than settle matters, and it is not much to ask. We have the pleasure to start the subscription with ten pounds, and we shall be pleased to acknowledge all subscriptions sent either to us or to Lionel Newbery, Esq., of 37, Newgate-street, the treasurer of the fund.

A SUGGESTION TO THE PHARMACEUTICAL COUNCIL.

WILL the Pharmaceutical Council do us the honour of considering a suggestion from us on the provincial education question, which at least has the merit of being simple? The objections to Mr. Schacht's proposal seem to be, on the one hand, that it demands too much from local associations, and on the other hand, that to carry it out at all effectively and universally, the £2,000 per annum at the disposal of the Society would be very insufficient. Our scheme would be that the Council should engage three or four talented young men, students of its own school, whom it should be willing to "let out" as lecturers to provincial towns, on easy terms, for a few weeks at a time. The advantages of a plan like this would be manifold. The interest in local schools would assuredly die away before long, while a succession of lecturers would be likely to arouse and maintain vitality. The Society would have a perfect guarantee against any approach to cramming; and what is of no small importance, it would have positions to offer to its pupils, which would serve as distinctions, and at the same time would set apart a small number of men who would keep up the highest character of pharmacy. Of course, every town in Great Britain could not be supplied all at once, but if each lecturer had a district allotted to him for a few weeks

at a time, a fair portion of the country could be covered in the course of a year or two. By this plan, too, the advantages of centralised and diffused efforts would be very fully combined.

MUNIFICENCE.

WE mentioned recently a report that Mr. Holloway, the proprietor of the well-known pills and ointment was about to endow some charitable institution in a most magnificent manner. To build a hospital might, perhaps, indicate a declining faith in those wonderful remedies which have so often succeeded when all other remedies have failed. It is therefore said to be Mr. Holloway's design to erect, at his own expense, a middle-class asylum at Virginia Water. The asylum will cost from £70,000 to £100,000, and will accommodate two hundred patients. It will be maintained for a year by Mr. Holloway, after which it is expected to be self-supporting, and will be handed over to the management of trustees.

"SAFE" OILS.

THE manufacture of "safe" petroleum oils is a regular business in the United States, and taxes the ingenuity of all classes of the community. The *Boston Journal of Chemistry* reports the device of a Massachusetts peddler, who is introducing into families "a new inexplusive oil," which with an impudent confidence in the meagreness of technical education among the people generally, he claims to be "pure petroleum with all the nitro-glycerine taken out!"

ASSISTANTS' SALARIES.

WE have of late received a good many letters from assistants who seem to have become infected by the epidemic of discontent which is flowing over nearly all classes of *employés*. We publish one specimen this month. We are not unaware of the fact that chemists' assistants have to work for very long hours, and that their pay is very moderate; nor are we indifferent to this fact. But we wish to indicate one or two points which disincline us to take the matter up with any energy. In the first place, there is no sort of doubt that both as regards hours and pay a vast improvement has taken place even within the last ten years. Salaries too are, on the average, double what they were a quarter of a century ago. Then again, it should be considered that assistants in shops, as a rule, are not burdened with housekeeping, as are most other *employés*; and it is the rapid increase in the cost of housekeeping expenses which has been the foundation cry of all our strikes. In the case of indoor assistants, it would be rather an argument for reducing than for augmenting salaries. Finally, and chiefly, we would remark that in so far as the business of a chemist and druggist approaches a profession, so certainly will the salaries of assistants be low. This is explainable, but we do not propose to enter on the theory now. We are contented, in order to prove our statement, to point to the wretched salaries usually paid to doctors' assistants or lawyers' clerks, and to curates. It is almost hazardous to insinuate that an apprentice, when he has finished his term, has anything else to learn; but it is a fact which must be taken into account, that in order to finish off a chemist and druggist, he must not only have served an apprenticeship

and passed his examinations, but should also spend several years in gaining varied experience. A chemist's assistant must therefore consider himself partly paid by the experience which he gains; and though this, of course, injures those whose single object is to earn a living, they have no choice but to submit to the circumstances which govern their business.

THE LATEST TREATMENT OF SEWAGE,

MAJOR-GENERAL SCOTT, the energetic Secretary to her Majesty's Commissioners of the International Exhibition, has introduced a new system of dealing with sewage. All other efforts have been directed to the discovery of a process which should most conveniently separate from the water the valuable manure contained in it. General Scott's plan is to precipitate the organic and mineral substances contained in sewage by means of lime and clay, and to burn the sludge thus obtained in a kiln, to make a cement for building purposes. This idea is now being carried out at Ealing. The cement thus made is sold for 35s. per ton, the net profit being 10s. 4½d. per ton. General Scott does not claim to render the effluent water purer than it results from other processes; but he claims that the water thus perfectly clarified is most fit for irrigation purposes, and he further suggests that by using his precipitants with sewage in the drains, the formation of sewer gases will be almost perfectly prevented, and further that the use of lime in this way neutralizes the acidity of the sewage, which sometimes destroys the joints of the drains.

KILLING RATS.

THERE are many ways of disestablishing rats besides the short and ready methods of poisons or traps. Count Moltke might be proud to have invented some of the siege processes which we find described in a foreign contemporary.

First there is the old French plan; this is followed chiefly in Paris by men who make it a special business. They take a deep tub with water on the bottom, and a little elevation in the middle like an island, on which is only place for just one rat to sit on. The top is covered and has a large balanced valve, opening downward; on the middle of this valve a piece of fried pork or cheese is fixed, and when a rat walks on it to get the cheese, the valve goes down, drops the rat in the water, and moves back in position. A road is made from a rat-hole to the top of the tub, by means of a piece of board rubbed with cheese, so as to make the walk attractive for the rats. In the course of a single night some ten, twenty, or even more rats may go down, and if the island was not there they would be found most all alive in the morning quietly swimming round; but the provision of the little island saves the trouble of killing them, because their egotistic instinct of self-preservation causes them to fight for the exclusive possession of the island, on which in the morning the strongest rat is found in solitary possession, all the others being killed and drowned around him.

Secondly, we come to the New York plan. The floor near the rat-hole is covered with a thin layer of moist caustic potassa. When the rats walk on this it makes their feet sore; these they lick with their tongues, which makes their mouths sore; and the result is that they shun this locality, not alone, but appear to tell all the rats in the neighbourhood about it, and eventually the house is entirely abandoned by them, notwithstanding the houses around may be teeming with rats.

Thirdly, we have the Dutch method, a very cunning device, but probably difficult to experiment about. A number of rats are left together to themselves in a very large trap or cage, with no food whatever; their craving hunger will cause them to fight, and the weakest will be eaten by the strongest. After a short time the fight is renewed, and the next weakest is the victim, and so it goes on until one strong rat is left. When this one has eaten the last remains of any of the others, it is set loose; the animal has now acquired such a taste for rat-flesh, that he is the terror of ratdom, going round seeking what rat he may devour. In an incredibly short time the premises are abandoned by all other rats, which will not come back before this cannibal rat has left or has died.

ARSENIC PAPER.

THE *Boston Journal of Chemistry* suggests a very ready means of testing the ordinary green wall-papers for arsenic. The tests for arsenic, strictly so-called, are suited only to laboratory use, but since it is the arsenite of copper that is employed for the poisonous green colours, a test for copper is sufficient for ordinary purposes. Put a drop of aqua ammonia on the suspected paper, and if it changes the colour to blue, you may be sure that copper is there, and almost as sure that arsenic is present also. There is not one chance in a hundred that a more critical examination would lead to a different conclusion. At any rate we advise our readers not to use any paper on the walls of their houses, or for any other purpose, if this simple test makes its character suspicious.

PEPSINE WANTED.

Mr. J. BEGG, Manager of the Springbank Chemical Works, Bellfield, writes to the *Glasgow Herald* to say that the following materials were found in the stomach of a horse, the carcass of which was sent to the works on the 6th of March last:—"Broken nails, 629; nails 1½ to 2 inches long, 30; ditto 1 to 1½, 144; spring nails 1 inch, 131; ¾-inch tacks, 158; screw nails, 6 whole and 3 broken, 9; rivets, 2; broken gas burner, 1; shoe tacks, 15; broken pieces of metal, 129; nail heads, sorts, 102; small washers, 5; buttons, 4 whole and 4 broken, 8; pieces of lead, zinc, and round shot, 75; small pieces of wire, 121; pins, 33; ditto broken, 4; needle, 1; ditto broken, 20; small broken pieces of wire riddles, 889; glove catch, 1; boot eyelets, 7; hook and eye, 1; small wire staple, 1; small brass ring, 1; odd bits of metal, 8—in all, 2,525 articles, weighing 3 lb. 2½ oz.; and of gravel and sand, 6 lb. 13 oz. Total, 9 lb. 15½ oz." That horse ought to be a warning to those who despise the art of the pharmacist. He had evidently heard of the tonic properties of iron, but had disregarded the necessity of presenting it to the constitution in an available form. We are at a loss to understand his fancy for gravel and sand, but we are aware that human physicians prescribe some curious medicines occasionally.

THE BRITISH ASSOCIATION.

THE forthcoming session of the British Association for the Advancement of Science is to commence at Brighton on Wednesday, August 14, at 8 p.m. precisely, when Prof. Sir William Thomson, F.R.S., will resign the chair, and Dr. W. B. Carpenter, F.R.S., will assume the Presidency, and deliver an address. On Thursday evening, August 15, at 8 p.m., a *soirée*; on Friday evening, August 16, at 8.30 p.m., a discourse on Insect Metamorphosis, by Dr. P. M. Duncan, F.R.S.; on Monday evening, August 19, at 8.30 p.m., a dis-

course by Prof. Clifford; on Tuesday evening August 20, at 8 p.m. a *soirée*; on Wednesday, August 21, the concluding general meeting will be held at 2.30 p.m.

The Presidents of the sections are the following:—Section A: Mathematical and Physical Science—Warren De La Rue, F.R.S. Section B: Chemical Science—Dr. J. Hall Gladstone, F.R.S. Section C: Geology—R. A. C. Godwin-Austen, F.R.S. Section D: Biology—Sir John Lubbock, Bart., M.P., F.R.S. Department of Zoology and Botany. Sir John Lubbock, Bart., M.P., will preside. Department of Anatomy and Physiology. Dr. Bardon Sanderson, F.R.S., will preside. Department of Anthropology. Colonel A. Lane Fox will preside. Section E: Geography—Francis Galton, F.R.S. Section F: Economic Science and Statistics—Prof. Henry Fawcett, M.P. Section G: Mechanical Science—Frederick J. Bramwell, C.E.

LATEST INTELLIGENCE FROM BRIGHTON.

WE are compelled to add ten pages to our literary contents this month in order to publish Mr. Brady's Inaugural Address, delivered at Brighton on Tuesday last, and Dr. Attfield's paper on Pharmaceutical Education.

We learn from Brighton that the Conference was opened on Tuesday morning, with a good attendance, among the company being Professors Markoe, of Boston, and Wayne, of Cincinnati; Professor Redwood, the President of the Pharmaceutical Society, Mr. Henry Deane, and many other pharmaceutical luminaries were also present. A letter of invitation from Bradford was read, and the invitation accepted. The Report of the Executive Committee followed, and its adoption was proposed by Mr. Cornish, and seconded by Mr. Salmon. Then followed the President's address, for which a vote of thanks was proposed by Mr. Savage, and seconded by Mr. Brew. Dr. Edward Squibb, of Brooklyn, and Professors Markoe and Wayne, were elected honorary members. At the morning sitting were read a selection from Dr. Attfield's paper; "Pharmaceutical Education," Mr. Julius Schweitzer; "Notes on Education," Mr. Barnard S. Proctor; "Pharmaceutical Ethics," Mr. S. R. Atkins.

In the afternoon letters relative to Professor Attfield's paper were read from Mr. E. Smith, of Torquay, Mr. Mackay, of Edinburgh, Mr. William Gilmour, one of the Board of Scottish examiners, Mr. David Kemp, and Mr. Peter Squire. "Educated intelligence," said the latter in effect, "is a better safeguard than the best devised Act of Parliament." Professor Michael Foster was appealed to by the President to relate his experience with regard to the practice of examinations and as to how far they might be accepted as a test of knowledge. He reserved his remarks to the conclusion. Many members spoke on the subject. Mr. Sandford read a short paper, which was mainly a review of Dr. Attfield's tractate. Mr. Hampson, of Islington, had also committed his remarks to manuscript. Mr. Haselden, President of the Pharmaceutical Society, defended the present system of examinations, insisting, as indeed was the case with the generality of the speakers on the imperative necessity of preliminary education. Mr. Schacht, as well as Mr. Reynolds, explained the several schemes with which their names are popularly connected. Mr. Giles assented to the adoption of the machinery provided already by the Government system, wherever it could be applied to such technical instruction as would advance the interests of pharmacy; Mr. Carteghe gave his views with his usual clearness and animation.

Then the meeting broke up, carefully shunning the adjournment of the question to another day. Further discussion would have led to no practical result. At present, as far as the Conference is concerned, the battle of the "Crammer Schools" is ended.

On Tuesday evening the local members invited those from a distance to a supper, and Wednesday was devoted to papers of a more strictly pharmaceutical character.

The supper officially called the Cold Collation was given in the banqueting-room of the Pavilion; the grotesque Chinese warriors and ladies gazing from the walls on modern

pharmacy. Mr. W. D. Savage took the chair; Mr. T. A. Brew was the Vice. The effect of the lighted room was brilliant, and a vote of thanks would have been proposed to George the Fourth, but time forbad, and the guests took their several ways, not without the kindest feelings prompted by the hospitality of Brighton.

Foreign Correspondence.

GERMANY.

DRESDEN, August, 1872.

TIMES are gone when in the chemist's shop mysteriously-looking pots could be found, labelled *axungia hominis*, *axungia ursi*, &c., which scrupulous Kreisphysici and Medicinalräthe were in duty bound to examine as carefully as possible and testify as to their genuineness. Well, yes, the times indeed are gone, but their old companions have shown themselves to be of a tougher nature; there is still a demand for these articles by superstitious people, who ascribe supernatural virtues to the prepared lard, which serves by turns as man's and bear's grease. In country districts a chemist could hardly refuse to supply such a demand, and although he knows that by doing so he encourages superstition, while his calling morally obliges him to diffuse knowledge and intelligence, to combat superstition, and to enlighten ignorant people as to the true nature of such stuffs, yet notwithstanding all explanations offered, a consequent refusal would seriously injure other branches of his business, and he may well plead "my poverty, not my will, consents." Quite different is the case in large towns; the demand for such things on the whole is small, besides that the pharmacists can afford to refuse to become parties to a transaction which bears all the signs of a fraud, and yet such an unworthy practice is still carried on even in very large establishments with the full knowledge and sanction of the principals. This forms indeed a striking contrast with the contempt in which pharmacists hold patent or quack medicines, and with their claim, that their establishments are self-supporting schools of natural science, which cost the State nothing, and from which culture and intelligence are spread in all directions,—a claim put forward in a most marked manner, especially within the last few months. With regard to this practice, a Berlin pharmacist only a short time ago received a practical lesson, which will probably prevent him from continuing it. In a restaurant in that city sat at midnight a merry company, and although not connected in any way with pharmacy their conversation turned upon pharmaceutical affairs; and one of the party at last offered a bet, that he would get from the next chemist's shop half a groschen worth of man's grease. The offer was accepted, the gentleman left, and soon returned with a little wooden box of lard, and so won his bet. The affair did not end here. Next day appeared in one of the local papers an article, severely commenting upon this transaction, and pretty clearly pointing out the establishment in question. This was bad enough, but worse came after. The president of the police wrote a letter to the proprietor, strictly forbidding him to deal further in such wondrous specimens of the *Materia Medica*, and ordering him to give instructions accordingly to his assistants. From the publicity given to this incident by the *Pharmaceutisches Zeitung*, it might have been inferred that it would act as a warning to other pharmacists, but this notion seems erroneous, for a few days later, going to a first-class establishment in D—, one of the largest in Germany, and asking for viper's grease, I was at once supplied with the same universal medicine heretofore alluded to. I will add that some years ago there appeared in one of our weekly journals (*die Gartenlaube*), with a circulation of several hundred thousands, some articles under the title, "Revealed Mysteries of the Chemist's Shop," exposing the same practice, and exhorting the pharmacists to give up a habit which so much served to strengthen superstition especially among the lower classes of the population.

I have to correct my former statement as to the time the annual meeting of the North and South German Chemists' Associations is to take place. The time fixed for it is the 3rd to the 5th of September, not 24th to the 26th.

In a recent note made by Dr. Lisbach on quinium tannicum, this compound is said to possess many advantages over sulphate of quinine. Dr. Hager makes to this the following remark:—"After many experiments made on my own person and others, I have found, that as a febrifuge, tannate of quinine at the most is only 1-10th as effective as sulphate of quinine, and 9-10ths can again be found in the urine and faeces."

Dr. Husemann, in Gottingen, has made a series of experiments to establish beyond a doubt the question whether perfectly pure carbohc acid is poisonous or not, the latter theory being maintained by Dr. Hamberger in the 'Hygiea.' The experiments were made with acids supplied by different manufacturers (Calvert's included), and the results obtained undoubtedly proved the very poisonous effects even of the purest acid.

Mr. Jobst, in Stuttgart, has had the Java Cinchona barks, sold in Amsterdam in the month of March this year, subjected to an analysis, but this analysis differs not inconsiderably from that published in the *Pharmaceutical Journal*, as the following figures will show:—

I.—*Cinchona Calisaya*.

Per cent.

Quinine	1.10 = 1.49 sulphate of quinine.
Chinidine	0.48
Conchinine	0.12
Cinchonine	0.33
Amorphous bases ..	1.36

Summa .. 3.39

II.—*Cinchona Hass. Karliana*.

Per cent.

Quinine	0.50 = 0.68 sulphate of quinine.
Chinidine	0.81
Conchinine	0.11
Cinchonine	0.42
Amorphous bases ..	0.68

Summa .. 2.52

III.—*Cinchona Officinalis*.

Per cent.

Quinine	1.90 = 2.58 sulphate of quinine.
Chinidine	0.99
Cinchonine	0.23
Amorphous bases ..	0.61

Summa .. 3.73

IV.—*Cinchona Paludiana*.

Per cent.

Quinine	0.13 = 0.18 sulphate of quinine.
Chinidine	1.17
Amorphous bases ..	0.77

Summa .. 2.07

V.—*Cinchona Succirubra*.

The quantity was too small to allow a thorough analysis. In his concluding remarks Mr. Jobst says, "The moment is not very far when cinchona officinalis and calisaya can successfully be used for the manufacture of alkaloids."

THE BRITISH PHARMACEUTICAL CONFERENCE.

Inaugural Address by the President, Henry B. Brady, F.L.S., Newcastle-on-Tyne.

IT seems to have become a recognized duty of your President to open the general proceedings of the Conference by a review, from one standpoint or another, of the progress of pharmacy during his year of office; and when I look back to the addresses that have on such occasions emanated from my predecessors, I may well have misgivings of most serious nature as to my ability to follow in their footsteps without discredit to myself and disappointment to you. Happily, however, there is no necessity strictly to follow precedent, for the duty of summarizing periodically the results of pharmaceutical research is now undertaken by one far better fitted for the task,—with larger opportunities for its right performance, and not bound by the restraints and limitations incident to a general address,—I allude to the accom-

plished editor of your "Year Book." Concerning his work I will say no more at this moment than to point to it as an explanation of my decision to speak of the present and future, rather than of the immediate past of pharmacy. And I am the more impelled to follow the course thus open to me, for alas! circumstances unforeseen when I accepted the post I have the honour to hold, and altogether beyond human control, have placed it out of my power to follow closely the advance either of those branches of science which directly concern us or of the manipulative arts which enter into our daily employment. The report which you have just heard read will satisfy you, as it well may, of the flourishing condition of the Conference. Thanks to recent agitation in the pharmaceutical world, and to the feeling of safety in union engendered thereby,—to the ample return in kind members now receive for their small annual contribution,—thanks, above all, to the energy of your indefatigable secretaries,—the Conference has attained a position in point of size, influence, and power for good, which was never dreamt of by those who assisted at its foundation. In so far as the general history of the Conference is concerned, I might have addressed you in terms of simple congratulation; but other questions arise, and I should have been disturbed, whilst dilating on the augmented power and importance both of our own body and of the parent society, by the lurking consciousness that, notwithstanding increased disposition to united action, somehow or other, pharmacy in this country was not so prosperous—that its higher aspirations were not so vigorous—as the numerical strength and popularity of its representative associations might lead one to suppose. I confess, too, that I am impressed with a fear that had I in preparing my address sought for worthy material of purely scientific sort in the journals, proceedings, transactions, and the like, which have appeared since our meeting in Edinburgh a year ago, I must have relied to a far greater extent on the records of foreign than of home research. The President of the Chemical Society, in a recent discourse, averts in striking terms to the lethargy which has enveloped original chemical investigation in this country; and the words spoken, demonstrably true as to pure chemistry, might be applied with almost equal emphasis to other branches of scientific knowledge bearing on pharmacy. To judge by our publications for the past year or two, pharmaceutical energy in this country has been directed almost exclusively into two channels,—firstly, the relations of pharmacy to the State; and, secondly, the more wide-spread provision of facilities for that rudimentary scientific education which recent enactments impose on the pharmacist of the future—both of them difficult, but altogether momentous questions.

It is needless to narrate the process by which the present satisfactory condition of legislation in respect to pharmacy has been arrived at. The patient thirty years' labour originated by a few earnest, far-sighted men,—seconded, gradually perhaps, and not without a safe amount of hesitation and doubt, but in the end, as the subject came to be understood, ably seconded by the body at large, and in due time supported by public opinion—has led at length to the carefully devised and thoroughly practical law which we now enjoy. In a survey of the State relations of pharmacy in the various Continental countries, I know not where we should look for a broader or more satisfactory basis of legislation or one so suited to the genius of our institutions than exists at home. The protection of the public from errors arising out of incapacity and ignorance, is, prospectively speaking (for a generation must pass before the full effect of the law is seen), as nearly complete as legal enactments can ensure, and this is effected without excessive interference with the jealously-guarded rights of property, or with that exercise of individual judgment which the members of an educated body may justly claim. I allow that the present educational status of pharmacy might have justified greater legislative stringency, but the very basis of the law is *improved education*, and we are, it is admitted, in that transition stage which demands provision for the future rather than the immediate present; behind us is the chaos of chance—before, the substantial guarantee of the Pharmaceutical Society that order shall reign. A Government granting the privileges of the latest Pharmacy Act, could demand no less than this guarantee for the future; respect for the circumstances of those whose means of live-

lihood depended on the business in which they were already engaged admitted no more. How vexatious and unprofitable any interference with what we call "vested interests" would have been, we may see from the experience of our brethren in New York. The chemists of that city, by an arbitrary police regulation, were, a year ago, compelled, old men and young, to come up for examination before a Board constituted on principles that astonish Englishmen; an imposition so onerous and oppressive that pharmacists of all conditions were compelled to unite to obtain its repeal. Herein we find a sufficiently practical reply to those who look no further than the present. If I introduce another point in which circumstances have favoured us, it is only because its importance may have been too little appreciated.—I allude to the practical unity of the examining board, and the practical uniformity of the examinations for diplomas in all cases in England and Scotland. Happily we have not been beset with the complexities that have attended all attempts for the better regulation of the issue of licences in medicine; complexities depending on the rights hitherto enjoyed by a large number of historic corporations, and hitherto exercised without reference to any uniform standard. This want of recognized standard exists in the United States, not only in medical, but in pharmaceutical degrees, with an additional element of confusion in the fact, that except in one or two cities, pharmacy is under no compulsory regulation. There the diplomas, medical and pharmaceutical, of the colleges of the various States are of the same legal value (in so far as they have legal value at all), and as examination fees are a considerable source of income, other inducements must be held out where scholastic advantages are not of the highest sort to ensure full classes. Hence the prospect of a diploma on easy terms is a not unnatural counter attraction. I heard an eminent professor in a New England university lament that, owing to these causes, medicine had ceased to be a learned profession in his country. I do not wish to dwell on these considerations further than is necessary to demonstrate at the outset that the great end of recent political agitation is gained; that pharmacy is now regulated by a law affording sufficient protection to the public by the compulsory education it necessitates, giving larger privileges to those practically engaged in it, free on the one hand from the looseness of voluntary provisions, and on the other from the excessive interference and inspection in vogue in many Continental States—hence that we are in a condition in which we may turn our attention to advancement *from within* rather than to those political topics which have so exclusively occupied the thoughts of our members for the past two or three years. This may fairly be expected of us, and that it is expected I do not hesitate to say.

The address of Professor Huxley, a year or more ago, when distributing the seasonal prizes at University College, will be in the recollection of most of you, especially certain passages in which he condemned *materia medica* (apart from therapeutics) as a subject of medical study—a dictum which fell like a thunderbolt in the camp of those who are doing to-day, and will do to-morrow, what they did yesterday, because they did it yesterday. The extraordinary development of some all-important divisions of medical science, notably of physiology and minute human anatomy, renders it impossible to cram into the few brief years of collegiate training a satisfactory amount of knowledge in the whole of the long list of subjects which it has been the custom to embrace in the curriculum of medical study.

It is no part of my business to discuss the relations of inorganic chemistry, *materia medica*, and botany, to the scheme of medical education; but words uttered in public, by a leader in science, affecting us so closely in their indirect bearing, can hardly be dismissed without a glance at the issues they involve. It is true enough, as was stated by Professor Huxley, that the standard British work on *materia medica* is a treatise *de omnibus rebus*; that, in point of fact, "*materia medica*" is a mere *nom de convenance* for a heterogeneous mass of facts, referrible mainly to biological (chiefly botanical) and chemical science. and whether its details might not be advantageously taught in their natural places, instead of sifting them out for separate treatment, is quite open to debate. But whatever the manner of treatment, the subjects involved must be taught—if not to students in medicine and surgery,

then the more certainly to students in pharmacy; and thus a double responsibility rests upon us in respect to these important sections of medical knowledge.

I hold that this utterance of Professor Huxley's contains by inference a fresh and most important recognition of the fact that the scientific attainments of the pharmacist must be complementary to those of the medical practitioner, separated only by that sort of line which marks all divisions of human labour; that, prospectively, the two avocations must be more and more dependent upon each other, the physician looking to the pharmacist not merely as the compounder of his prescriptions, but as to one on whom he can rely for assistance in scientific subjects closely allied to those which are his own more immediate concern.

You will ask whereto these reflections lead. In endeavouring to answer the question, I desire before all things to bear in mind that pharmacy from our point of view does not present a fanciful, experimental form of science, meet for the amateur, but primarily, a means of earning a subsistence; and I hope I shall be preserved from making a single remark inconsistent with this fundamental consideration. I trust, also, that I give due weight to the fact that pharmacy only began to assume a definite position in this country with the passing of the Pharmacy Act four years ago. Before that time whatever was done in Great Britain to advance pharmaceutical science, and much was done, was accidental rather than the result of system. It is essential that we keep the past very clearly in view in our endeavour to trace the requirements of the present.

Questions affecting the training of the rising generation of pharmacists pertain to the functions of the Pharmaceutical Society rather than directly to the Conference, as do those also which concern the opportunities which exist for prosecuting pharmaceutical research. But this need not preclude their free discussion here, indeed, they force themselves upon our notice at a time like the present, when educational problems are uppermost in the public mind. The papers promised to the Conference on the former of these subjects will be received with interest, and their discussion may clear the way of some of the difficulties which, though they undoubtedly exist, are unnecessarily magnified by those who would "rest and be thankful" rather than commit themselves to any new exertion.

That the Board of Examiners of the Pharmaceutical Society is fully alive to the importance of a higher standard of preliminary education we see frequent evidence, but its action has been very properly influenced by consideration for the position of youths who had chosen their vocation before it could be said with any certainty that their future must depend on their ability to pass examinations. But the time when leniency on this ground can be extended without discredit to the Society is rapidly drawing to a close, and an increase in the scope and stringency of the demand on youths entering the profession ought at once to receive serious attention. Neither could there be any complaint of hardship in the adoption of a higher standard, if due notice were given of the intention of the Board to raise their minimum requirement. It cannot be too prominently kept in view that the Preliminary examination is not of itself pharmaceutical; that it is but the means of assurance that a youth has sufficient general knowledge to give him the best chance of pursuing the vocation he has chosen, with success to himself, and with credit to the body at large. Such examination ought, therefore, to follow immediately on leaving school, so that the mind may be at liberty from the commencement of the term of pupilage for the acquirement of technical and scientific knowledge. It is no part of the duty of a principal to do the work of a schoolmaster. A youth who cannot pass a good examination in the branches of learning comprised in what is usually understood as a liberal education, is not fit to commence his apprenticeship as a pharmacist; and a principal who at the present time takes an apprentice without reference to his preliminary training does a direct injury to the body at large, and performs no kindness to the youth himself. Supposing a boy has to remain a year longer at school, can that be regarded as any real hardship, or is he likely, in after life, ever to regret the slight initiatory delay? Can he possibly, in the long run, be a loser by it? I am far from asserting that our middle-class schools are what they ought to be, however much they may have been im-

proved of recent years; but taking them as they are, it cannot be urged that there is any serious difficulty in obtaining a fair English education, together with instruction in the rudiments of Latin, French, and German. If, as Mr. Bengier hinted in his suggestive paper, read before the Conference at Liverpool, our ranks are likely to be recruited from a wealthier stratum of society than hitherto, there is still less excuse for laxity and indulgence. This subject of preliminary education now needs plain speaking; it lies at the root of the whole question of the advancement of pharmacy. Without a wider and deeper foundation than is at present secured, no worthy superstructure can be raised.

It appears to me that the liberty to proceed to the "Minor" examination immediately on passing the "Preliminary" is a grave mistake. We have done away with the necessity of apprenticeship, and no longer require the guarantee of practical experience and teaching that the old system of indentures afforded; *perhaps* this is as it should be, but we ought at least to be clear that sufficient time has elapsed after the youth has been able to devote his energies to pharmacy pure and simple, whether bound as an apprentice or not, to enable him to acquire, leisurely and systematically, the knowledge necessary for his technical examinations, and I do not think that an interval of three or four years is too much to insist upon, in order to secure this end.

The Minor Examination demands a moment's notice because, under the present Act, it is the Registration test. The efforts which have been made to render it thoroughly practical would receive fresh support by the adoption of the course I have ventured to suggest. The bane of all examinations is the temptation to "cram"—you will excuse the word, I know of no better—but I conceive that it is very much in the power of the examiners to render mere "cramming" almost or entirely ineffective. No candidate pretends to cram for the dispensing examination, and I speak with some experience when I say that it would be easy to make the botanical section as completely practical as the dispensing. I cannot doubt that the examination in chemistry might in the same way be supplemented by tests to which crammed knowledge would furnish no reaction.

The diploma of the Major Examination ought to be regarded very much in the same light as the Fellowship of the College of Physicians or the College of Surgeons is in their respective bodies, and the value of the degree it confers ought to be as jealously guarded. There can be no reason why the Society should be satisfied with a lower standard than that which has long been in vogue for the "Pharmacien de la Première Classe" in France.

It has been suggested by one whose opinion carries weight with it, that the occasional presence during the examinations of a non-pharmaceutical assessor—say, a scientific chemist of eminence not belonging to our own body—would be in many ways an advantage. The mere "looker-on sees most of the game," and the suggestions of an independent observer could not fail to be of service to the examiners. His criticism would diminish the tendency of the examinations to settle into particular grooves, and would help to give them a wider scope and higher significance. The moral effect would be to increase the confidence of the examiners themselves when obliged to act as their judgment rather than their will might dictate, and to support their decisions in the eyes of the public.

In these observations I know I shall not be understood to express any distrust of the Board of Examiners. My object is to strengthen their hands in the performance of laborious and thankless duties; and I gladly, from knowledge, bear testimony to the ability, and conscientious care, and self-sacrifice which are the very atmosphere of the Board-room.

There is still another subject closely connected with the foregoing, upon which I would say a few words.

I cannot regard with any satisfaction the large unused balance of income which the Pharmaceutical Society has of recent years annually funded. The day has gone by for laying up talents in napkins. A professional or business man is morally bound to put aside part of his income, so that he may rest in after life when his capacity for toil is lessened; but for a public body, no such plea will hold. So long as the Society was on a voluntary basis, and doubt might be supposed to exist as to its pecuniary stability, the executive was bound to provide against many contingencies, and our thanks are due to those who then so economically

administered the funds placed in their keeping. But we are no longer beset with the dangers of that period, and beyond an investment sufficient to guarantee the means of carrying out the examining and governing functions entrusted to the Society by Government—a limit long since passed—there can be no excuse for the accumulation of wealth. These constantly recurring investments under our present circumstances represent good left undone—opportunities unaccepted. Nor in this hoarding of money instead of science is the Pharmaceutical Society true to the spirit of its founders. The Society was formed to do in a collective capacity what could not be done by individuals. The chance of recognition by the Legislature, the efficient organization of chemists as a body, the establishment of a central library and museum, are, for instance, all matters depending on the co-operation of numbers. The laboratory and lectureships may be included in the same category, but are only right objects for corporate provision, in so far as they bring what could not otherwise be obtained. But the relation of the Society to these latter departments has entirely changed, and their existence in the old form is becoming, if it has not already become, an anomaly. What they provide, as at present constituted, might even now in great measure be safely left to private enterprise. Far be it from me to underrate what the laboratory instruction and lectures at Bloomsbury-square have been to the Society. The founders saw clearly, that without giving facilities for education which did not previously exist, the establishment of examinations whilst the Society was on a voluntary basis, could meet with no general response. Now the response is certain because it is supported by compulsory powers—hence the co-existence of other schools of pharmacy with that in Bloomsbury-square.

Your excellent treasurer makes a strong claim in behalf of organization and subsidies for local schools.

Such establishments, even in the larger provincial centres, are not likely, at first, to be entirely self-supporting, any more than was that in the metropolis thirty years ago, and the demand for assistance is nothing more than the maintenance of our first principle—that the corporate society should help forward pharmaceutical education when individual effort is insufficient. The subject is one which may be safely left in the hands of those who have already given so much time and thought to it. I need not here pass any opinion on the relative merits of the various systems which have been proposed for the regulation of money grants, and I would not willingly weaken the claim of any by my less mature suggestions. One thing, however, must be borne in mind, namely, that the very fact of requiring assistance is an evidence of weakness, and that no school can be said to exist on a permanent or satisfactory basis until it is self-supporting. We must be careful to do nothing to place further away the time when science-teaching amongst us shall be a properly remunerative occupation, and it can only become so when those who reap its benefits are content themselves to pay a remunerative price for it. There is already far too great a disposition to regard education as a thing that should be supplied for nothing, or at least that an increased amount should be obtainable without increased cost. A physician or a lawyer spends his money and time cheerfully upon his technical education, regarding the outlay as capital invested in business; and the pharmacist, until he does the same thing in like spirit, has not established his title to professional status or remuneration.

But there is another claim which must be made, not stronger than that which has been alluded to, but one which may well coexist without interfering with it—namely, the provision for higher training, and for scientific research of unremunerative nature. Every one here will, I am sure, support the proposition, that the larger the amount of scientific culture possessed by pharmacists, the higher must be the general status of the profession, and, even in a pecuniary sense, the better their position as a body. The recognition of this, to us, new field of usefulness need not imply any neglect of the duties at present recognized as pertaining to the Pharmaceutical Society. Without materially interfering with its existing functions in respect of rudimentary education, a great deal more might be done than has yet been attempted in the encouragement of higher train-

ing, and in affording facilities for original investigation. It has seemed to me that the most substantial aid which could be rendered in the direction alluded to would be the setting apart of a number of free benches in the Society's laboratory for students who, having passed the Major examination with credit, might desire to continue their studies. These should even be endowed with a small annual income, under certain conditions, if found necessary. The only primary stipulation should be that, possessing the requisite preliminary knowledge, the recipient should be ready to work for the advancement of pharmacy under the direction of the professor. The Bell Scholarships will, I know, be pointed to as an effort in the direction indicated, but these have failed materially to influence the body, firstly, from their insufficiency, and secondly, from the conditions properly associated with them. They would be more likely to answer a good purpose if they were both applied as the Junior Scholarship now is. In the present state of pharmacy we require not the stringent conditions of competitive examinations to prevent men from carrying forward their studies, but rather the open-handed liberality that will induce students to consider whether they cannot give up another session or two, before commencing business, to that higher sort of education which is not immediately remunerative. The effect of half-a-dozen or a dozen men so trained, sent out annually from Bloomsbury-square, would be to make a British school of pharmacy the like of which has never existed; and were this carried out, the most serious difficulties in the way of provincial education would resolve themselves in a few years. It may be urged that no demand for a higher scientific culture exists; I reply, how do you know? But if it be so, the sooner you create the demand—and you will inevitably create it if you are in earnest in offering the means of supply, and have the necessary patience—the better for the interests of pharmacy and those who follow it. I do not suppose that a crop of brilliant discoveries would immediately follow the adoption of such a scheme, but we might surely calculate on additions to our knowledge of pharmaceutical subjects, such as have never emanated from the students of the metropolitan laboratory of recent years; and in any case the prestige of the Society must be increased, and the status of pharmacy correspondingly advanced. You will at least have made the laboratory something more than a forcing-house for pass-examinations.

Nor do these proposals represent new or untried modes of fostering research. The present position of Germany in the scientific world is due to nothing so much as the opportunity and encouragement afforded to young men. Laboratories for purposes of research are there open on terms that can debar no one from entering who desires to work in them. In some cases they are absolutely free, not only to Germans, but to students from other countries; and their classes composed of men engaged in similar subjects, in friendly rivalry and emulation, are the seminaries of new aspects of scientific inquiry and of fresh lines of philosophic thought. I am far from wishing to exalt our neighbours at our own expense, but we are bound to read the lessons which their success inculcates. The Pharmaceutical Society has means enough at its disposal; surely it would be better that its pride should rest on constant investments in science and intellectual wealth than in the perpetually swelling assets of its annual balance sheet.

I have endeavoured to point out that the parent Society is the source whence we have a right to look for the provision to a great extent of *opportunity* for pharmaceutical investigation, and I must now as pointedly allude to the Pharmaceutical Conference as possessing the machinery, easily extended to meet increased requirements, for organizing and systematizing research. In its very first programme the Conference was defined as "an organization for the encouragement of pharmaceutical research," nor can it be said that the means which have been adopted from time to time in furtherance of this purpose have been altogether unsuccessful. The circulation periodically of a carefully revised list of subjects, concerning which further investigations are required, is a plan originally borrowed from the American Association, and is probably as good a means as could be devised for preventing waste of labour. The number of valuable contributions to knowledge which have resulted from suggestions contained in this annual circular

sufficiently attest its positive as well as its negative advantages. But to be entirely successful such a method requires the more general co-operation of the members than it has yet received. The duty of compiling the list ought not to be left to the very few who have hitherto, in default of general assistance, undertaken its revision, still less that of accepting and working out the subjects comprised in its queries.

The Conference too may be made serviceable in collecting information from different portions of the kingdom, and in special cases our members residing abroad might be made use of to similar ends.

In many branches of science difficulties occur in respect to publication, but herein we have no lack. If our own "Proceedings" are too tardy a medium, the Pharmaceutical Society is ready with its weekly "Journal."

Methods other than those roughly indicated for the promotion of scientific culture will, doubtless, present themselves as the subject receives the increased attention it demands. Collective thought and associated action are alike needed to attain the first step—the provision of opportunities. But there is much to do beyond merely clearing the path of external impediments. Year by year some of us have more and more to confess, that it is to younger men, with increased advantages, that we must look to take the scientific position we have desired and do but see afar off; and under these circumstances, the attitude of the older to the younger is one of paramount importance. I am reminded of a passage in one of Mr. Ruskin's books containing a powerful statement upon the duties of criticism, and encouragement and guidance, which, though written of and for artists, hardly needs the alteration of a word to make it equally applicable to all who have intercourse with students in the early stages of their career. The mental condition in which right intellectual labour is accomplished is much the same whatever the object in hand; and I need scarcely apologize for quoting the paragraphs as they stand, although the introductory portion may not be exactly to our present purpose.

"What we mainly want, is a means of sufficient and unagitated employment: not holding out great prizes for which the young are to scramble; but furnishing all with adequate support, and opportunity to display such power as they possess without rejection or mortification. . . . But a more important matter even than this of steady employment, is the kind of criticism with which you, the public, receive the works of the young men submitted to you. You may do much harm by indiscreet praise and by indiscreet blame; but remember, the chief harm is always done by blame. It stands to reason that a young man's work cannot be perfect. It must be more or less ignorant; it must be more or less feeble; it is likely that it may be more or less experimental, and if experimental, here and there mistaken. If, therefore, you allow yourself to launch out into sudden barking at the first faults you see, the probability is that you are abusing the youth for some defect naturally and inevitably belonging to that stage of his progress; and that you might just as rationally find fault with a child for not being as prudent as a privy councillor, or with a kitten for not being as grave as a cat. But there is one fault which you may be quite sure is unnecessary, and, therefore, a real and blameable fault; that is haste, involving negligence. Whenever you see that a young man's work is either bold or slovenly, then you may attack it firmly; sure of being right. If his work is bold, it is insolent; repress his insolence; if it is slovenly, it is indolent; spur his indolence. So long as he works in that dashing or impetuous way, the best hope for him is in your contempt; and it is only by the fact of his seeming not to seek your approbation that you may conjecture he deserves it.

"But if he does deserve it, be sure that you give it him, else you not only run a chance of driving him from the right road by want of encouragement, but you deprive yourselves of the happiest privilege you will ever have of rewarding his labour. For it is only the young who can receive much reward from men's praise; the old when they are great, get too far beyond and above you to care what you think of them. You may urge them with sympathy, and surround them with acclamation; but they will doubt your pleasure, and despise your praise. You might have

cheered them in their race through the asphodel meadows of their youth; you might have brought the proud, bright scarlet into their faces, if you had but cried once to them, 'Well done,' as they dashed up to the first goal of their early ambition. But now, their pleasure is in memory, and their ambition is in heaven. They can be kind to you, but you never more can be kind to them. You may be fed with the fruit and fulness of their old age, but you were as a nipping blight to them in their blossoming, and your praise is only as the warm winds of autumn to the dying branches."*

I must now turn to matters which you will be disposed to remind me should have occupied a more prominent place in my discourse, but in reality the proceedings of the Conference for the past year seem to call for little comment. The most notable point is doubtless the publication of the second "Year Book." This volume, issued with commendable promptitude after the last meeting, has long been in the possession of the members; it has been freely criticised by the scientific press, both at home and abroad, and so far as I have been able to gather has been received with unanimous favour. How much of its excellence is due to the gentlemen who constitute the Committee of Publication, how much to the able editor, it is needless to inquire—my office is rather to congratulate the Conference on being enabled by their exertions to perform so great and so permanent a service to pharmacy, and to express a sense of obligation in which every member of the body will join, to Editor and Committee alike, for the spirit with which they have entered into and carried through a laborious undertaking.

We have again to acknowledge the thoughtful liberality of one of our members who is ever ready to render material aid when the interests of pharmacy may be furthered thereby. Mr. Hill's last gift puts the Conference in possession of funded property, yielding a permanent income similar in amount to the annual instalments of his previous benefaction. To what your Executive Committee has already said in this matter I need add little. The gift has been accepted on behalf of the Conference, and with it the responsibility of its right application, conscious the while, that result rather than words would form the expression of thanks most congenial to the donor.

You will expect a few words from me on another topic of more personal nature. In fulfilment of a long-projected plan, I last year took a somewhat extended holiday in North America. The meeting of the American Pharmaceutical Association was the focus of my travels; and, as I held your commission to represent the Conference as far as circumstances might admit at the St. Louis Convention, I am in some sort bound to report the reception accorded to me on that occasion. In doing so, I need not occupy you at any great length; indeed, I can scarcely add to the little I have already said in public without going into details of greater extent than seems desirable. The hospitality of the American people towards strangers—especially towards travelling Englishmen—is universally recognized, and their desire to stand well in the hearts and esteem of our countrymen exists everywhere, so far as I could find, except in their newspapers. But it needs more than this general acknowledgment of kindly feeling to explain the sort of welcome I received amongst their pharmacists and the attention they so liberally bestowed. That I was with them as your representative may be held to account for the rest. The most hearty reciprocation of your message of good will and friendship has dwelt in my mind whilst the horizon has been clouded by the political strife engendered by clumsy diplomacy—strife which I am persuaded has no existence, save perhaps in moments of passing irritation, in the hearts of either people.

The American Pharmaceutical Association was accepted as a model when our Conference was founded, and its proceedings, therefore, cannot be uninteresting to us.

Without legal status or recognised powers, the Association exercises a sort of moral influence throughout the country, which is of great importance where there is no control emanating from a central authority—an influence which in ethical questions can scarcely be overvalued.

An illustrative case occurred last year at St. Louis.

When the credentials of the various delegates to the Convention were considered, the question was raised whether the kind of pharmaceutical instruction afforded by one of the bodies claiming to send a representative, and the nature of their examinations were such as the Association could approve and recognise, and it was eventually decided that the delegate from the body in question (the University of Michigan) could not be admitted in an official capacity, and he was, therefore, debarred from exercising any representative functions.

Another case showing similar care for the true interests and standing of the profession occurred a year or two ago, and will be in the recollection of many of you. An eminent pharmacist prepared and advertised largely an article which he termed "Sweet Quinine." The character of the man was sufficient to disarm suspicion, and an enormous sale for his nostrum was a practical certainty. Circumstances led to an examination of the medicine, and it was found to be a compound containing cinch-nine only as an active ingredient. Neither the standing of the pharmacist, his activity as a member, his scientific attainments, nor his personal popularity amongst his associates could save him from expulsion. He was one whose co-operation the body could ill afford to lose, but duty to themselves and the public was paramount.

The report of the meeting at St. Louis has already been published, and those who have seen it will hold me excused from making any detailed review of the proceedings, and will be content with the record of general impressions.

Notwithstanding the enormous distances from each other of the chief American cities, the gatherings of the Association are very largely attended, and the number of members who participate actively in the business of the meetings is much greater than I anticipated, judging from our own experience; indeed, the amount of scientific matter usually brought forward is such as we could not attempt to grapple with at these brief Conferences. This scientific work consists in great measure of reports on subjects selected from the annually-published list of queries, and is, therefore, directed to points concerning which information is really wanted. The papers were much more satisfactory to my mind than the discussions they evoked, though the latter often made up in spirit what they lacked in order. The custom of reporting in full, and not always very correctly, mere conversational remarks, can hardly be regarded as a happy one.

Altogether, the meeting of the Association is a larger affair than anything we attempt. The sessions extend over about four days, which are very fully occupied, the evenings being generally devoted to social gatherings in one form or other. The frequent presence of ladies at the sittings was a feature that struck me forcibly and favourably. Often when subjects of general rather than purely technical interest were under consideration, the aspect of the assembly was brightened by this absence of exclusive rule. I am sure I need not add that no interruption to the course of business was thereby caused, or that the fairer were models of attention to the sterner portion of the assembly.

The fearful disaster at Chicago, which occurred just as I was leaving America, brought to the surface the deeper-seated feelings of our countrymen. The opportunity afforded to pharmacists in this country to express in substantial form their sympathy with those of like profession in the far West was not disregarded. Distance is no barrier when common interests are concerned—interests are never more rightly felt to be in common than when one portion of the body is under the cloud of misfortune and suffering.

And now, gentlemen, it is time I released you to attend to the real business of the meeting. In the remarks which it has seemed to me a duty to make, I have spoken with equal freedom of our own body and of the Society from which we sprung. There is no difference in the objects of the two institutions; they are and must be perfectly harmonious and complementary to each other. The particular methods open to them to attain the same end—the advancement of pharmacy—differ considerably, but only as different roads to one goal. Without the Pharmaceutical Society the Conference could never have been; with the establishment of the Conference, the best day of the Society dawned. The success of each must be the chief delight of the other. This is my defence, if it be needed, for the order in which I have placed my thoughts before you.

* "Political Economy and Art," p. 34.

One word more. I have spoken of the Conference and its duties, of the Society and what I believe to be incumbent upon it, but let us bear in mind that Society and Conference alike are composed of members, and that no individual member of a body corporate is excused from his share of work. Let me put it rather in the words of Lord Bacon:—"I hold every man to be a debtor to his profession; from the which, as men, of course, do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto."

PHARMACEUTICAL EDUCATION.

By PROFESSOR ATTFIELD.

INTRODUCTION.

NO apology is necessary for bringing the subject of pharmaceutical education before the members of the British Pharmaceutical Conference; for the Conference is an organization chiefly for the encouragement of pharmaceutical research, and research is impossible where education does not flourish. Before we can promote pharmaceutical research we must promote pharmaceutical education. Moreover, the annual meeting of the Conference affords the only opportunity for discussion of the whole subject of pharmaceutical education by the leading pharmacists of the country.

Definition.—By pharmaceutical education, I mean such instruction in the principles and practice of chemistry, botany, and *Materia Medica* such a knowledge of practical dispensing or the compounding of medicines and such acquaintance with all that relates to prescriptions and the Galenic preparations of a *Pharmacopœia*, as shall fit a man to be a chemist and druggist or a pharmaceutical chemist.

The claims to importance of pharmaceutical education no longer need enforcement; they are recognised in almost every civilized country of the globe. England was not the first to acknowledge them; she was preceded or has been outstripped by France, Germany, Russia, and Switzerland. In Norway "the study of pharmacy is regulated by a law which dates from 1672," (1. i. 241).^{*} Still, thirty years and more ago a society was founded in Great Britain "for the purpose of advancing chemistry and pharmacy and promoting an uniform system of education of those who should practise the same," as well as for protective and eleemosynary purposes. For these special objects "The Pharmaceutical Society of Great Britain" was granted a Royal Charter of Incorporation in 1843, an Act of Parliament legalising the title of Pharmaceutical Chemist in 1852, and another in 1868 raising the term Chemist and Druggist to a title only to be acquired thereafter by those possessing such a pharmaceutical education as would stand the test of appropriate examination. The followers of pharmacy, as a body, the legislature and the public have admitted and recognised the importance of pharmaceutical education.

The object of the author of this paper is, then, not to maintain the importance but to consider the nature and extent of pharmaceutical education in England as gauged by the legal examinations. Two additional questions relating to pharmaceutical education are occupying attention at the present time. The one is how to supply the demand for knowledge which compulsory examination has called forth; the other is the future relation of the Pharmaceutical Society to pharmaceutical education.

But before either of these questions can be usefully discussed, the character of the knowledge required by a candidate for the "Minor" must be considered. To show that this order of procedure is imperative, let me somewhat expand the former question—that which is generally described as the question of provincial pharmaceutical education. Members of the Pharmaceutical Society and other pioneers of pharmaceutical progress are commendably anxious that sound education should be provided for the young men who are legally compelled to pass the "Minor" Examination before they can be styled "Chemist and Druggist;" the majority of the young men themselves obtain only such an amount of information as will enable them to pass the said examination. Let us here distinguish between things different. The principals in pharmacy residing in pro-

vincial towns are asking the Council of the Pharmaceutical Society to aid in the development of local schools of pharmacy, on the assumption that compulsory examination has created a wide-spread demand by assistants and apprentices for pharmaceutical education. Now I assert that such a demand ought to exist and that under improved organization will exist, but that it does not yet exist. The demand for knowledge which has arisen on the part of the young men is, I regret to say, of a vastly inferior description to that which is rightly embraced under the term education—knowledge of a kind and extent such as would be beneath the dignity of any recognised school to supply. The principals are basing their agitation on a demand for genuine education which does not yet exist; the candidates for the title of chemist and druggist are being supplied with a spurious education without any agitation at all. I shall bring forward proof in support of this statement presently; meanwhile I assert that the Pharmacy Act of 1868 has not created any demand for sound pharmaceutical education that did not exist before 1868, and that consequently any attempt to supply such education before the demand arises will result in that loss of effort, time and money which has hitherto followed nearly every attempt to establish a school of pharmacy in the provinces. If what I state is true, it will be admitted by all that the first question for discussion is the nature and extent of the education which should be possessed by every candidate for examination; and second, what means can be adopted whereby to ensure that a candidate does possess this knowledge. If sufficient means can be devised and employed for rendering certain the acquirement of this knowledge by a candidate, then, and not till then, will a demand for sound education arise. Only when these two questions have been satisfactorily settled will there be any *locus standi* for the third question—namely, how best to provide candidates with means for acquiring pharmaceutical education commensurate with the demand that will then arise; and fourth, the relationship of the Pharmaceutical Society to pharmaceutical education.

PHARMACEUTICAL EDUCATION.—PAST.

I shall first treat of pharmaceutical education from its birth in this country (1841) to the time of the passing of the Act providing compulsory examination (1868); next, state its lamentable position at the present time; and, lastly, consider the means by which it may be raised to its proper position; a position, that is to say, under which true schools of pharmacy can flourish throughout the country under the fostering care, but not necessarily under the immediate control, of the Pharmaceutical Society of Great Britain.

1841. In the first volume of the first series of the *Pharmaceutical Journal* (1. i. 41), one of the leading objects of the Pharmaceutical Society was stated to be "the establishment of a system of education which will give professional character, influence, and respectability to the whole body."

1842. After a few preliminary lectures on botany, delivered in the summer, on account of the facilities for obtaining fresh plants at that season, a School of Pharmacy was held at 17, Bloomsbury-square, in October, 1842. In the course of an introductory address, the Vice-President, Mr. Charles James Payne, said, "It is greatly to be regretted that so many circumstances have combined to keep the great majority of chemists and druggists, in past times, to that continuous and unwearied application to the mere mechanical part of their business, which commercial habits induce, so that we have constantly had occasion to deplore the lack of information in the principles of our art, which has been betrayed by many who have been brought up to it. Without entering into the various causes of this deficiency, the most striking has certainly been the want of a defined and regular system of education amongst the chemists and druggists as a body, and the absence of some compulsion to avail themselves of it. . . . We conceive that no youth should be allowed to enter upon the study or practice of pharmacy, who has not received such a scholastic education as shall have brought his mind into habits which will prepare him for a pursuit in which the intellect must be brought into exercise continually." After alluding to the preliminary examination, he says, "We then consider that a young man's professional knowledge should embrace a competent acquaintance with Chemistry, *Materia Medica*, Botany, and Pharmacy. . . . We are not about to merge the trade in the profession, but to establish the trade upon fixed and scientific principles." In

^{*} Such figures (1. i. 241) throughout this paper refer to the series, volume, and page of the *Pharmaceutical Journal*.

this the first session, a course of lectures on Chemistry was given by Fownes, on Botany by Todd Thompson, on *Materia Medica* by the same gentleman, and on Pharmacy by Redwood.

The Council seems to have recognised the fact that these early morning lectures would only be attended by students residing in the metropolis and suburbs, for in a leader in the *Journal* (1. 2. 121) occurs the remark that, "When the school in London is completely established and has realized our expectations, it will be time to consider the propriety of forming branch schools in other parts of the country, where the amount of population and the zeal of our brethren in the cause of improvement are such as to give scope for the undertaking. We have received communications from several places on this subject, and have no doubt that when the proper time arrives, the zeal will not be found wanting."

1843. The subject of provincial schools of pharmacy still occupies attention (1. 2. 669). "The necessity of adopting some measures for promoting an improved system of education among the rising members of our body, not only in London but in all parts of the country, appears to be generally felt and acknowledged." Lectures were delivered and proposed to be delivered in Manchester, Bristol, Bath, Liverpool, Newcastle, Norwich, and Birmingham, and the editor of the *Journal* trusts that "the time is not far distant when these and other branches of our institution will be provided with some means of instruction for students in pharmacy. The manner in which this is to be effected," he goes on to say, "requires mature consideration. It is evident that the number of country schools must be limited, since no institution of this kind could flourish without a certain number of pupils. The amount and description of assistance afforded by the Council to such measures must also be regulated on fair and equitable principles, and must be dependent on the state of the funds of the Society. In some places, facilities may exist for adopting the lectures of a medical school, in others it may be found necessary to establish separate courses for our students. In these and other particulars, a variety of circumstances must be considered, and whatever plans are adopted, should not be decided on without the most mature deliberation. Our object is to establish an effectual and permanent system of education, in effecting which object no contingency should be overlooked; and whatever plans are proposed, must be considered with reference not merely to any particular locality, but to the general interests and requirements of the Society at large. We are not yet prepared to go into the details of the subject, but to allude to it on the present occasion in consequence of the communications which we have received from correspondents in the country; being anxious to promote pharmaceutical education by every means in our power, and at the same time to point out the necessity of considering so comprehensive a question in all its bearings."

The foregoing quotation is lengthy, but I am sure that neither it nor the others I have given or shall give, will be considered out of place, for they not only illustrate the rise and progress of pharmaceutical education in this country; but have a direct bearing on the questions of pharmaceutical education in the provinces and in London, which are now occupying so much of the attention of the Council and members of the Pharmaceutical Society.

In the Report of the Council for the year (1842-3), the country members are assured that the establishment of provincial schools and the extension of means for facilitating education throughout the country locally, has not been lost sight of; at the same time they are reminded that a reduction of the annual subscription from two guineas to one, which had been mooted, would deprive the Council of the means of affording pecuniary aid to provincial schools. The erection of a laboratory at Bloomsbury for the practical study of Chemistry is also hinted at; and thus even at this time, while the collapse of local schools is foreshadowed, such an extension of the metropolitan is contemplated as was destined to attract thither pupils from the whole country, and make it a provincial as well as a London school.

On August 16th, 1843, the subject of education was maturely considered by the Council (1. 3. 104). "The Council were unanimous in the opinion that it was imperative upon the Pharmaceutical Society to introduce a more regular plan of education for students in pharmacy than had hitherto existed in this country, and to extend the benefits of public

instruction to all places in which it may be found practicable; at the same time it was thought expedient to proceed with some degree of caution, and to establish schools in such towns only as could be expected from their population and other advantages to support them creditably." Manchester was at once aided by a grant of thirty guineas, which, with the pupil's fees, enabled the local committee to defray all expenses incurred in the delivery of twelve lectures on chemistry, and the same number on general and medical botany. As further evidence that originally there was no intention to confine pharmaceutical education to the metropolis, attention may be drawn to the fact that grants of money purely for educational purposes were also made in 1843 to Bath, Bristol, and Norwich, the total amount thus given to provincial schools during the year being £221 10s. (1. 3. 236 and 567). The reports from the four branch schools were most encouraging, and the editor of the *Journal* (1. 3. 197) seemed disposed to deduce therefrom an argument in favour of voluntary pharmaceutical education, but he suspends judgment, seeing some indications that ultimately compulsory education may have to be enforced. Ultimately the Council announced (1. 3. 287) their intention of awarding annual grants to branch schools to the extent of one-fourth of the amount of annual subscriptions received from the town or district, and additional small grants towards the purchase of books and collections illustrating *Materia Medica*. The conditions under which the grants would be made, accompanied the announcement, "In regulating the local privileges of each branch, the first consideration to be attended to is the welfare and improvement of the parties immediately concerned; and if strangers be admitted to any of these privileges, the terms and mode of admission should be such as to give members, associates, and apprentices who subscribe to the Society, a decided advantage over others." With regard to the number of such schools, it was considered that five or six in such localities as possessed the greatest facilities for their growth would produce more benefit than a larger number established on a scale too limited to be kept up with spirit (1. 3. 462).

1844. This year, effort in the cause of voluntary education met with the first indications of that want of response on the part of those for whom it was exerted that seems to have attended it from that time to the present. Manchester deplored the indifference of her young men, the attendance at the London school did not equal the expectations of the Council, the reports from the other schools do not seem to have been encouraging. The annual subscription to the Society was also reduced from two guineas to one, effectually preventing any further grants that might have been required for education in the provinces. From various parts of the country, however, came inquiries from learners who seemed anxious to devote a certain portion of their time entirely to study. This stimulated the Council in carrying out their original intention of establishing in London such a laboratory for instruction in practical chemistry as should, with the courses of lectures, library, etc., afford ample scope for the exertions of pupils during a certain number of months prior to their passing the examinations. A laboratory was therefore provided, and a course of practical instruction arranged. Thenceforward the school in the metropolis ceased to be simply a metropolitan school. As a mere London school it probably would, like the other schools, have been closed for want of support, but affording educational occupation for students during the whole of the day, it attracted just a sufficient number of pupils from the whole area of England and Wales to warrant the Council in maintaining it, and from time to time increasing its efficiency. While still the school in London, it ceased to be the London school, but became what it has since continued to be, the School of Pharmacy for the whole of Great Britain. The Pharmaceutical Society was thus enabled to carry out its object of providing means of obtaining pharmaceutical education for the whole of the country, though not in the manner anticipated.

1845. In this year the Council of the Society further develop their scheme of general pharmaceutical education. The school is alluded to as "a national establishment for the cultivation of pharmacy and the education of chemists and druggists" (1. 5. 145). Pharmaceutical education itself is also accorded a position commensurate with its importance,

and its claims for consideration by the parents of pharmaceutical apprentices urged in a dignified manner. Jacob Bell, the founder of the Pharmaceutical Society, the leader of its Council, and the editor of its journal, thus speaks of the educational organization of the Society, in words peculiarly worthy of reproduction at the present time. Alluding to attendance on the Society's courses of lectures, laboratory instruction, etc., he says (1. 5. 105): "These have been instituted for the purpose of enabling young men to become fully acquainted with the theory and practice of pharmacy; and the progress which has been made has demonstrated the benefit to be expected from a continuance of the undertaking. We hope this will become in course of time a regular part of the education of the chemist, and that parents when placing their sons in a house of business, will insist upon the privilege of a season being allowed for this very important study. The apothecary, or general practitioner, is obliged to devote the last two or three [it is now four] years of his apprenticeship to lectures, dissections, and hospital practice, and could not be admitted to examination without producing certificates of such attendance. The education of the chemist ought to be as elaborate in degree as that of the medical practitioner, and it is quite as necessary for him to study in the laboratory as it is for the medical student to walk in the hospital. There is as much science required in one department as in the other, although the nature of the studies varies with the occupation; and since the medical student is obliged to give up two or three [four] years to the scientific study of his profession, the student in pharmacy has no reason to complain if required to devote a year to a similar object. A parent who could afford to give an apprentice-fee with his son, could equally afford to pay the small additional expenses of instruction in a school of pharmacy. Those who could not defray the necessary charges attendant on a proper education, should bring up their sons to some other business more consistent with their means."

1846. Nothing could better show the devotion of the Pharmaceutical Society to the cause of Pharmaceutical Education, an object which until recent years continued to hold the foremost place, than the fact that in 1846 the Council positively decided to relinquish the Society's functions as an examining body rather than give up its mission as an educating institution. Fearing that Parliament would not grant the powers of compulsory examination to an educating corporation, the Council proposed to transfer its examining powers to what was to be called "The College of Pharmacy of England," to be constituted solely for the purpose, and a Bill was drafted on the principle (1. 5. 557). It was considered that such a College, by creating a demand for pharmaceutical education, would give an impetus to schools of pharmacy: competition between the schools would have a salutary effect, and the emulation thus excited would lead to improvements in the system of education.

1847. Objections to the proposed Bill having been urged, especially by the College of Physicians (1. 6. 497), the machinery of the Pharmaceutical Society was adapted to the end in view without the co-operation of a second body. These preliminaries had, however, occupied so much time that the opportunity passed for introducing the bill to Parliament. It served, nevertheless, to stimulate the arrested energies of provincial pioneers in education. Acting on the assumption—then, as now, a wrong assumption—that compulsory examination involved compulsory education, meetings were held in several towns, again, notably, Bristol, with the object of resuscitating local schools of pharmacy.

1848 to 1852. During this period pharmaceutical education made slow but certain progress. The numbers of students at the school of pharmacy increased, though the average period of study decreased. It continued to be chiefly attended by pupils from the provinces. A school in Birmingham was also attempted, but "the Committee regret that the attendance was neither so numerous nor so regular as could have been wished." Liverpool also started the school which, with varying fortune, has been open ever since.

Once more a Pharmacy Act was sought, and once again the dread that Parliament would not listen to men who had sanctioned such an unholy alliance as that of education with examination induced the Council to raise two spectres,—one, the continuance of the Society as an educating body, and the establishment of a College of Pharmacy for conducting the

examinations; the other the adoption of the Society as the examining body and the relinquishment of the school of pharmacy. But the ghosts vanished. A Select Committee of the House of Commons sifted the question, and finding that the school was not only not carried on as a source of revenue, but at a great annual expense; that the professors were not interested in attracting pupils from other schools; and the examiners not interested in favouring candidates who had derived their education from the Society, took no exception to the Society's duplex character.

Parliament thus tacitly sanctioned the very sensible and only possible relationship to education which the Society had hitherto followed. The editor of the journal hoped that other schools of pharmacy besides that at Bloomsbury would eventually flourish and prove remunerative, and that when that result was obtained the Society would gladly resign its educational functions.

The Council also reported (1852) that "If, contrary to past experience, it should be found that Schools of Pharmacy and Practical Chemistry can be supported without endowment or collateral aid, the maintenance of an educational establishment connected with the Society may be unnecessary. At the present time the Council think it would not be right to abandon the proceedings which have contributed to give the Society the character and influence it now enjoys."

1852 to 1868. During the interval that elapsed between the passing of the Pharmacy Acts "the Council of the Pharmaceutical Society continued steadily to persevere according to its original programme, in the advancement of education sometimes without much prospect, but always animated by the hope that the object of the Bill introduced in 1852," namely, compulsory education, examination, and registration "would be accomplished and this period of probation probably furnished the means of success. . . . When the public demanded that certain restrictions should be placed on the sale of poisons, the Council of the Society succeeded in obtaining recognition of the principle they had always enunciated, that education of the vendor was the only safe foundation for a Poison Bill." Midway in this period of sixteen years, pharmaceutical education in this country lost its founder and best friend, Jacob Bell. In life this noble-minded man never wearied in urging the claims of pharmaceutical education, and at death, besides assigning the valuable copyright of the *Pharmaceutical Journal* to the Pharmaceutical Society, he munificently bequeathed two thousand pounds "to be expended in establishing or otherwise increasing the efficiency of the School of Pharmacy, or in promoting Pharmaceutical Education in such manner as the Council of the said Society shall deem expedient." The Council having reason to believe that the donor had contemplated such an application of his bequest, erected, with this £2,000 the present commodious suite of laboratories at the top of the premises in Bloomsbury-square. The school during this long term still annually costs the Society a considerable sum of money; but if the whole of the country, thus contributed to the support of pharmaceutical education, the whole of the country received the benefit, three-fourths of the students every year being provincial pupils. If the members in any one district received more benefit than another, Welshmen and Yorkshiremen may be said to have had the advantage, a session seldom passing without the presence of several representatives from the great northern county and the principality. In short, by supporting the school, the Society did all it could towards the support of pharmaceutical education throughout the whole country.

PHARMACEUTICAL EDUCATION.—PRESENT.

What has the Pharmacy Act of 1868 done for pharmaceutical education? Exactly a quarter of a century before that Act was obtained, namely, in 1843 (1. 3. 196), we were told that the schools of pharmacy—there were five in England at that time—were established for purposes of education, the libraries and museums of the Pharmaceutical Society organized for purposes of education, the examinations of members and associates devised for purposes of education, the *Pharmaceutical Journal* instituted for purposes of education. In 1841, education was to be the lever by which the character, influence and respectability of the whole body of chemists and druggists was to be raised. In 1842, the provinces caught up the cry. In 1843, lectures on pharmaceutical education were delivered in eight large towns. In 1844, to the London School for

Pharmaceutical Education was added a laboratory for the pursuit of practical pharmaceutical chemistry. In 1845, the metropolitan was converted into a national school for pharmaceutical education. In 1846, the Pharmaceutical Council elected to retain the power and privilege of educating rather than examining if either were relinquished. During the whole life of the Pharmaceutical Society, its watchword has been *Education*. Compulsory education; compulsory examination, compulsory registration. This is the order in which the three objects of the Society have generally been set forth (1. 5. 246), while education has always been looked to as an object superior to examination. Well, compulsory registration has been obtained, and a strong staff it has proved. Compulsory examination has been granted, and an admirable agent for good it might be made. But compulsory education, which everybody always thought was to follow in the wake of compulsory examination, as a valuable train follows a powerful engine, where is it? Where? It does not exist. What has the Pharmacy Act of 1868 done for it? Nothing. Emphatically, nothing. Worse than nothing; it has degraded voluntary education from its previous promising position; it has reduced its value by one-half. Prior to 1868, the average period of study of each pupil in the laboratory of your national school of pharmacy was from four to five full months, each student working daily from eight or nine o'clock till five; since 1868 it has been a little over two months. Till 1868, the Professor of Practical Chemistry in the school succeeded in teaching all students chemistry; after 1868, the majority have shown disinclination to learn anything beyond certain facts regarding "the definite chemical bodies of the Pharmacopœia." Class examinations of all candidates for the "Minor" and "Major" were instituted, the Professor taking upon himself the office filled at medical schools by the tutor; but as soon as it was found that these examinations covered the whole area of pharmaceutical chemistry, then the men who most needed them, those who only wanted to learn what was required for "the Minor" contrived to keep away. But worse than all this, the place which every well-wisher of pharmacy expected to see occupied by compulsory pharmaceutical education is filled by that hideous usurper, CRAM. Let me at once say that this is no fault of our excellent examiners. I shall have to use some very strong language in denouncing the practice termed "cramming," but not one word against the examination for which candidates are crammed. My remedy for cramming, on the contrary, is intimately connected with the elevation of education. I am of opinion that 95 per cent. of the cramming now practised can be prevented. With regard to this cramming or "coaching," it is a fact that, during the past ten months, more students have been crammed than have been legitimately prepared for the Minor Examination of the Pharmaceutical Society of Great Britain. There are establishments for cramming which received last session more pupils than sought the aid of the Society's School of Pharmacy. "It is not astonishing that so obvious a demand for 'coaching' should produce a commensurate supply of the abomination, and that we should be unblushingly told by advertisement that an *ignoramus* may be transformed into a *Chemist and Druggist* in a month!" (*Chemist and Druggist*, January, 1872). And what is very terrible, these crammers keep their word in most cases. I know I am helping to advertise them in stating all this, and would not do so but that I trust their days are numbered; added to which anyone may know that they do what they promise or they would not flourish as they do. The manner of performing it is as follows: A promise is exacted from every candidate that after passing the examination he shall return to his crammer and reproduce the questions he has been asked. Those brought by first pupils are carefully written down; and thus, in a short time, the crammer has a list of the questions commonly asked by each examiner; the lists are revised from time to time by the aid of subsequent candidates. On the entry of a pupil, a list of questions and answers in each subject is placed before him with the general instruction that the first half of each set is to be learned by heart, and the second to be acquired if possible. And so, one week is given to what is called "chemistry," one to "botany," one to "materia medica," and one spent over the "pharmacopœia;" and any

young man who has previously been in a druggist's shop is thus successfully prepared for the Minor. Nay, even if he has never before seen a prescription, an extra fortnight or so at "practical dispensing" enables him to satisfy the examiners. The successful legitimate candidate knows his subjects; the successful illegitimate candidate knows the questions that will be put to him. Will the Council of the Pharmaceutical Society allow these dreadful odds to obtain much longer? Can any language used in describing the system be too strong? Can it be characterized by too vile a name? Its true designation has been furnished by one of its own promoters. Eighteen months ago (3. 1. 629), "Charles Gerrard, described as a teacher, living in Lincoln's Inn Fields, together with another man, were charged with inciting a person in the employ of Messrs. Rivington, the printers, to steal an early proof of one of the examination papers of the Apothecaries' Hall. It appeared that the prisoners had for some time been striving to obtain a copy, and at length by arrangement with the police, the proof-puller was allowed to supply them with two copies, for which he received ten pounds. A detective then immediately arrested the prisoners, while the proofs were in their hands. They were both committed for trial," and subsequently convicted. What is the difference between stealing questions which have been written by the hand of an examiner and those which come from his mouth? A crammer is a thief. He has broken into the edifice of pharmaceutical education; he occupies the home and sphere of compulsory education; he has stolen property from the apartments devoted to examination; his principles are those of the burglar and usurper, he is literally a thief. Students, I trust the temptation to traffic with this destroyer of your self-respect and enemy to your real progress will soon be removed; meanwhile, pause before you listen to his wiles or purchase his wares, for if you enter and buy you will be aiders and abettors; the receivers of stolen property. There is a vast deal of difference between crammers and private tutors, though all are not private tutors who so call themselves, and all is not cramming that is so termed. Many a student swallows his intellectual food too fast; and honest teachers often have to warn honest pupils against this evil. All this is occasionally described as "cramming;" but the cramming I wish to denounce is the insidious and wicked process I have detailed; the thing which flourishes under the Pharmacy Act as it never before flourished, or can flourish in any other Court of Examiners—the thing which if not uprooted, or even if allowed to continue in its present stage of development, will render provincial schools unnecessary, and your central school the partial success that it has been made by the attendance hitherto of a few admirable pupils annually.

A few admirable pupils annually. Yes, pharmaceutical education is not yet swamped by superficiality or crushed by cram. Good men, most of them pupils of the Society's School of Pharmacy, still present themselves before the Board of Examiners as in the years before 1868. This is nearly all I can say for Pharmaceutical Education—Present. I regret to have to say so much of pharmaceutical cramming.

PHARMACEUTICAL EDUCATION.—FUTURE.

Discussion on the future of pharmaceutical education will be facilitated by a consideration of the causes which have reduced it to its present low position. The statement has been made that the standard of Minor examination has not been altered; that the Major, if changed at all, has been improved; that the examiners are mostly those who sat before 1868. Why should cram be more rife now than ever? Why does cram flourish at all?

As to the standard of examinations, I maintain that it has been lowered enormously. The examination which the collective wisdom of the leading pharmacists of the country had devised as that best fitted to test the capacity and capabilities of an assistant in pharmacy, and which always with the same object in view, had been altered and improved and made more practical from time to time during nearly thirty years, is suddenly so lowered *en masse*, as to be the examination for testing the capacity and capabilities of a principal in pharmacy, while the assistant is no longer asked to pass an examination specially devised for men of his own class. The examination originally designed as the minimum gauge or measure of a man's fitness to conduct business on his own account (the Major) must now logically be considered.

as indicating that he is somewhat above his business or better than he need be, a distinction so lightly valued that very few more aspire to it now than under the old voluntary system of examination. Of course, no one pays the founders of the Pharmaceutical Society such an equivocal compliment as is implied in this state of things; on the contrary, I presume that everyone considers that the old standards were wisely chosen and strengthened, and that when the present period of expediency and transition has passed, the old positions will be regained. If this be the policy of the Society it has my concurrence; I quite approve of the tactics by which the Pharmacy Act of 1868 was obtained. I point to the fact that the education formerly only good enough for assistants is now considered good enough for masters, as one that refutes the statement concerning the non-alteration in the standards of examination, and as one that could not do otherwise than damage the cause of pharmaceutical education.

Again, in the days of voluntary examination education was the chief object; examination was considered only as a test of the possession of education, and the passing of the "Minor" was only an incident in the student's career. Now, except by the few, examination is regarded as the end and education the means. Not only have education and examination changed places in general estimation, but while examination has kept its place, education has been forced from above to below—it has lost two places. Looking to the depression of the examination standard that I have already spoken of, education has been thrust to a very low position indeed.

Cram now flourishes in pharmacy to a greater extent than it did prior to 1868, simply because the demand for it under a compulsory system of examination is so great that its development on a grand scale is highly remunerative. Why cram flourishes at all at any examination is because examiners are but human and examination at its best a most imperfect machine for ascertaining the nature and amount of a man's knowledge. Why it flourishes to a tenfold extent at our examinations as compared with any other in England or the Continent—and it does so—is because our examining Board does not possess either of the guarantees against it possessed by other Examining Boards. In all Europe there is no system of examination so liable to abuse as our own. It is not exactly like any other, but approaches in character most nearly to those of the London University and the Medical Corporations. It resembles the general system of the London University (that is, excluding the examinations for degrees in medicine) to the extent of being conducted on principles similar to those by which free-trade is governed. A candidate at either board is not asked where he obtained his knowledge. The assumption acted on is that brain-power can be accurately measured by examination, and that if possessed to the requisite extent its source is immaterial. But at the London University a candidate is liable to be taken over a large area by a special examiner in each subject, the most eminent man as regards his subject that the kingdom can furnish. Even under these circumstances the time allowed to this examiner for *viva voce* examination of his candidate, though as long as practicable, is quite insufficient to allow of the whole area being traversed, hence a just decision cannot be given with certainty. Thus an entrance for cram is provided, for it is not brain power that is measured so much as memory, or the faculty of storing facts. But at the pharmaceutical examinations the area embraced by any one subject is not large, the examiner in any one subject is not, and it is unnecessary that he should be, the most eminent as regards that subject that the country can produce, and the time given to examination in any one subject is quite insufficient for thoroughly traversing even the limited area, nor would it be sufficient if double the present length. Thus even the imperfect guarantee against excessive cramming which obtains at the London University is not possessed by our own Board. Next, our examinations resemble those of the College of Physicians, College of Surgeons, and Apothecaries' Hall, in so far as they are conducted by followers of the same profession or calling as that which the candidate aspires to enter. But these boards possess a guarantee against cramming, which, though not perfect, is of great power and value, and is wholly wanting at our own board. Every candidate must produce evidence that he has had the opportunity of being properly educated at a recognized school for four years, as well as in preliminary matters,

and inasmuch as more than 90 per cent. of the candidates have, for obvious reasons, taken all the advantage they could of these opportunities, cramming is reduced to insignificant proportions compared to the position occupied by education. This supplement to examination is also required by nearly all the pharmaceutical examining boards on the Continent. I repeat that our examinations, as at present organized, especially the Minor, encouraged the rank growth of the noisome thing termed cram, and hence discourage the development of pharmaceutical education.

The remedy for this abuse is compulsory education. In this opinion I shall probably be supported by everyone interested in the welfare of pharmacy; but as to the form compulsory education shall take, there will, I know, be a less unanimous declaration. Respecting compulsory education in the abstract it would seem from a leading article in the number of the *Pharmaceutical Journal* published on the day I commenced to write this paper (July 20th, 1872), that everybody considers that this long-fought-for and grand object has already been obtained. I read, "In fact it may fairly be stated that the Society as a voluntary association has already completed its labour in the cause of education, and that, having succeeded in making education compulsory, it has done the work it originally projected. It is now the time for those who have been at best mere lookers-on to come forward and give their aid in making the advantages of that work accessible to all." Wrong, a thousand times wrong. The Society has *not* succeeded in making education compulsory. That the Society will ultimately succeed in so doing I have no doubt, for I have faith in its traditional policy as regards education, and in its educational leaders on and off its Council; but that compulsory education is already attained is a statement contrary to all the facts of the case, and one that I shall be astounded to hear maintained by anyone who may do me the favour to discuss this paper.

Compulsory education must be obtained in one of two ways. Either the class of experts whence the examiners are drawn must be entirely changed, the time allotted for examination greatly prolonged, and the area of examination considerably enlarged; or, on the other hand, the system may remain as at present, and simply be supplemented by a scheduled statement that the candidate has attended the classes of a recognized school for a stated length of time. Objections may be urged to both plans, but so far as I see, one or other must be adopted. Neither is perfect, but that any friend to pharmacy will reject both I cannot believe.

The "free-studentship" method is open to serious, and to my mind insuperable objections. I like the idea of a man getting his knowledge where and as he likes so that he gets it; but I do not see how the idea is to be embodied in pharmacy without opening a wide door to cram. "A really good examiner," Tait says, in an entertaining and most instructive article on Examination, or "Artificial Selection," as he terms it, in *Macmillan's Magazine* for March, 1872, "A really good examiner is perhaps the rarest product of civilization. In an unusually large experience extending to each of the three kingdoms, I have met but two, and I see clearly how each of even these might be greatly improved. . . . An examiner ought to possess not merely great knowledge but enormously extensive knowledge, of his subject and of the various modes of teaching it. . . . The examiner must possess simultaneously, infinite tact and thorough common sense. . . . Even if he be possessed of all these requisites, the examiner must be allowed sufficient time to test a man's knowledge. . . . Granting that all these desiderata can be supplied, there still remains the excessive difficulty of examining into the really useful part of one's knowledge. For, in the great majority of cases, the useful part is precisely that which it is least possible to break up into detached fragments, such as those required in the modern process of examination." The writer of this article, perusal of which I strongly recommend to all interested in the subject, further states his fondness for two methods of ascertaining fitness for work, but candidly says that he does not see how either could be applied at present: the first is the system of trial and approval which we apply to servants of every grade, from the most menial to the most confidential; the other is to take the certificate of such qualified teachers as have had the opportunity of observing the progress and behaviour of a student. The latter method

he considers to be something quite priceless compared with the quickly-formed, and, therefore, at best, dubious judgment of an examiner. For my own part, although I believe in freedom in trade, freedom in thought, and freedom in most things, I do not believe in freedom in education. A few years ago when the agitation in favour of free trade turned many free thinkers into free madmen, we could not get a Pharmacy Act because no one would allow free trade in poisons to be an exception to the rule. Even the schedule-of-attendance supplement to the medical systems of examination was said to be on its last legs. It was strongly attacked, but with the best results, for its abuses were remedied. Freedom cannot bind everything, however. It has let the valuable agents vulgarly termed poisons loose from its chain and allows them a certain amount of protection. Pharmacists are the last who should agitate for free trade in education.

The method of supplementing our ordinary plan of examination at the "Minor," by requiring the production of a Schedule of Certificates of (a) having passed the Preliminary examination, (b) worked for a stated period in a shop under a registered chemist and druggist, and (c) attended certain courses of instruction at a recognised school of pharmacy, is a long-tried method—a method the details of which are ready to our hands by application to the medical examining bodies in this country, or the pharmaceutical examining bodies on the Continent, and one under which, in our case, less cramming would be practised than by medical students. For the medical students who support the medical crammers are chiefly those whose friends having driven them into medicine against their will, have bribed them by a too-full purse. These men take care to be present in the body at lectures, and hence get their schedules signed, but at other times follow their own foolish ways, and at last have to seek the aid of crammers. In the nature of things this class would scarcely be represented in pharmacy; and I question if, under the schedule-of-attendance method, there would be a sufficient demand for cram to keep the loathsome thing alive. I have no objection, indeed, I have the strongest desire to see any possible improvement carried out in the selection of examiners. I do not know that there is at present any weak brother on our Board; if so, let him be displaced by a stronger forthwith. But, on the whole, I do not believe that a more able and patient set of examiners could be found in pharmacy than now sit at Bloomsbury. To go outside pharmacy for examiners, I do not think to be a practicable proceeding. I have no objection, indeed, I have every desire to see, both the Minor and Major Examinations, but especially the former, made more practical. To give the public the guarantee of the Pharmaceutical Society of Great Britain that a man is a "Chemist and Druggist," when, perhaps, he has never seen a test tube, and does not know how to detect an impurity, an adulteration, or a falsely-labelled chemical, is an anomaly that cannot much longer be excused; indeed, I know that the leaders in pharmaceutical progress are most anxious that this scandal should be removed with all speed. Let not the most sanguine suppose, however, that a more practical examination would be less liable to the invasion of cram; a crammer has greater command over practical than over theoretical matters. But neither the selection of examiners, nor any alterations in the examinations, is involved in the adoption of the schedule-of-attendance scheme. It is no part of my intention, nor is it my province, to advocate or decry the slightest interference with the present mode of examination. I simply wish those examinations, as they stand, to be made thorough. I wish them to be so supplemented as to involve the death of cram and the life of education. I select and support that one of the two methods of securing compulsory education which I believe to be effective and practicable. I see no difficulties in the way of the adoption of the principle, but even if fuller administrative powers were required from Parliament, I should with certainty of success proceed at once to obtain them.

In the firm belief that this question of compulsory education, and the form it shall take, will receive priority of discussion at the hands of the members of the Pharmaceutical Conference at the present meeting, and by the leaders of pharmacy hereafter, and priority of organization by the Council of the Pharmaceutical Society, I will now briefly introduce the subjects of *provincial* pharmaceutical education,

and the ultimate relationship of the Society to either or all the Schools of Pharmacy.

From data possessed by the Secretary of the Pharmaceutical Society, it is his opinion that in the course of a few years 1,000 youths will pass the Preliminary examination annually; that 750 apprentices will annually present themselves as candidates for the title of chemist and druggist, and 600 gentlemen will annually start in business. The present central school of pharmacy can accommodate 150 or 200 students in a session if each studies for a few months; there will therefore be room for three or four, or possibly five such schools. France possesses three. That a school of pharmacy can be established in every twentieth town is simply impossible. Moral reasons are said to prevent some people sending their sons to the school in London or other large town. If this is true, such parents should select a calling which can be followed nearer home, though I fail to see how that would meet the difficulty; it is chiefly that which cometh from within which defleth. At the same time I have long urged for other reasons the establishment of residential halls, clubs in connection with schools of pharmacy. I far more strongly sympathize with the patient and persevering youth who steadily prepares for the Minor by sheer hard work in a country village. It seems unfair to compel such a man to attach himself to a recognized school. The same objection to the compulsory-attendance plan obtains in the medical profession, but it is not found to be an important objection. In truth, I believe, that the number of such men is small, and I have found that they of all others are most glad to take advantage of professorial assistance. "There can be no doubt (3. 3. 50), that even where the pupil has the advantage of a master capable and willing to instruct him, he will be benefited in supplementing such practical instruction by hearing scientific principles systematically enunciated by other persons."

The steps by which to establish such schools in the provinces should be undertaken by the Council of the Pharmaceutical Society through the agency of committees and deputations, assisted by, and assisting local committees, all the care and deliberation exercised when founding the central school being observed in establishing the new schools. I am of opinion that such schools would be self-supporting, for I am assuming that pharmaceutical education is made compulsory in the manner suggested. That point reached, their financial connection with the Society would cease, whether the school were located in the metropolis or the provinces; but until that position were obtained liberal support should be accorded. The manner of distributing aid scarcely needs remark; there being only four or five schools, each would be treated on its merits without any elaborate machinery. To spread aid to pharmaceutical education broadcast over the whole country would, in my opinion, prove to be sheer waste of energy and money.

Mr. Benger's proposal (1. 1. 253) to establish special technical schools for boys intending to become pharmacists is important, but is scarcely practicable at present. Moreover, the rapid spread of scientific education in general schools will probably in time render any such proceeding unnecessary. That no chemist and druggist should take an apprentice who has not passed the Preliminary examination of the Pharmaceutical Society is a proposition which has been accepted by all who have spoken or written on the subject. I think it might be urged officially on every chemist and druggist in England as soon as the new and vastly improved Register is published. Mr. Edward Smith's suggestion (3. 2. 301) that only apprentices who have passed the Preliminary examination should be admitted as students at schools of pharmacy has my earnest support; I often temporarily fail in teaching a student some chemical fact or principle through his want of knowledge of arithmetic. Mr. Smith's method of ascertaining which are the deserving recipients of aid from the parent Society by an elaborate system of special examinations, and Mr. Schacht's original plan of carrying out the same object (3. 2. 401) would be attended by a vast deal of trouble, and would not, I think, with any amount of labour be successful. But if successful, such examinations would be open to the abuse of cram. Mr. Schacht's more recent scheme now before the Society extends aid only to provincial associations, having recognized schools similar in kind, and not very different in degree to those the establishment of which I

have advocated in this paper; such a plan was also urged by Mr. Huestwick (3. 2. 499). I have shown that all such schools must fail unless cram be crushed, but assuming this to have been done, then I do not see the need for any separate special examinations, the Minor itself would afford means of ascertaining the relative efficiency of these schools, and thus provide for the distribution of aid so long as aid might be necessary. As to the manner in which aid might be given, it would necessarily differ according to the requirements and amount of local support of the school, but Mr. Reynolds' plan (3. 2. 751) would probably be taken as a basis. "1. To increase the fees of teachers of chemistry, practical chemistry, materia medica, pharmacy and botany. 2. To pay one-half the salary of curator and lecture assistant. 3. To distribute such duplicate specimens from the Society's Museum as might be available. 4. To make grants to libraries. 5. To grant loans of materials for class teaching, with the power of making them absolute grants. It is clear that provincial schools must mainly be under local management. As a school, metropolitan or provincial, become self-supporting much of its connection with the parent Society would naturally cease; but the question whether all connection should lapse may well be postponed. I see no difficulty in providing suitable teachers for future schools of pharmacy. The sources are obvious, but I may mention one not quite so apparent. At present it is cause for constant regret that our Bell Scholarships do good to all other professions except our own; a Bell Scholarship is too often the lever by which a worthy, clever and ambitious young pharmacist so elevates himself that his talents are lost to pharmacy altogether. As a teacher or professor in a school of pharmacy he would find full scope for his skill and energy, and pharmacy not lose the fruit she had taken such pains to mature.

In conclusion, let me beg for the fullest consideration of pharmaceutical education by every pharmacist having the interest of pharmacy at heart. I invite objections to my own views; I ask for criticism; and if neither can be given, three words of approval will strengthen my position. The pharmaceutical press is open to all. I have Mr. Schacht's authority for stating that "the Council of the Pharmaceutical Society are most anxious to devise a scheme that shall prove generally satisfactory to the trade at large; and as in this matter they are treading upon almost strange ground, they feel that their way would be largely prepared for them, and their labours would be much assisted by the fullest expression of opinion on every point bearing upon the question." I have taken some pains to ascertain and, in the former part of this paper, partially to reproduce the opinions expressed several years ago by Council after Council of the Pharmaceutical Society, and other leaders in pharmacy on this same subject of pharmaceutical education. Their statements bear the stamp of much thought and mature deliberations extending over a long period, and are worthy of more careful perusal than has apparently been bestowed on them by most recent writers. My other contributions to the discussion are the views I have expressed in the second and third parts of the paper, and for which I alone am responsible.

HISTORICAL NOTES ON POISONING.

By DAVID FERRIER, M.A., M.D.,

Professor of Forensic Medicine at King's College, London.

(Concluded from p. 224).

EVERY one is acquainted with the history of the Borgias, and the long catalogue of crimes, in which poisoning figured conspicuously, which have been laid at the door of Pope Alexander VI. and his son Caesar Borgia. Perhaps many of these have been considerably embellished by tradition and many of the diabolical artifices to which they are said to have resorted may have only an apocryphal existence. Caesar Borgia is said to have worn a ring containing a concealed point tipped with deadly poison; and a particularly cordial shake of the hand, under the guise of the warmest friendship, was, to the person so highly favoured, the grasp of death. That there is nothing inherently impossible in such an artifice, what we know at the present day regarding poisons would give us many reasons to believe, however

much we may doubt the credibility of the narratives. At a banquet to which the pope and his son had invited certain cardinals whom they intended to despatch by means of poisoned wine, the butler, either wilfully or by mistake, changed the flasks, so that the pope and his son got the poison intended for their guests. Pope Alexander died; but Caesar Borgia recovered, and escaped for a time the death he so richly deserved.

In later times, Philip the Second of Spain was universally feared on account of the numerous villanies which he perpetrated by means of a poison which he called his "*requiescat in pace*." Pope Sixtus V., who ultimately fell a victim to this, used to say to the Spanish ambassador that Philip's "*requiescat in pace*" was the only thing he feared.

In the middle ages, the crime of secret poisoning was not more prevalent among the laity than among the clergy; and not unfrequently, where one would least expect it, the elements of the eucharist were the media by which it was administered. Pope Victor II., Christopher I., King of Denmark, and Henry VII., Emperor of Germany, are all reported to have perished in this way. It is related that Henry VII., on his return from Italy, where he had made many enemies both in Church and State, stopped at the small town of Buonconvento to celebrate the festival of Easter. After receiving the sacrament, he fell ill, and died in horrible sufferings, exclaiming, "*Calicem vitæ dedisti mihi in mortem*."

The right of sanctuary (*jus asyli*), which was strenuously maintained by the Church, did much to shelter criminals, both clerical and lay, and to render null and void the statutes enacted to check the frightful frequency of poisoning. Henry II. of England was one of the first to break through this privilege, and to bring to justice criminals of whatever class and from whatever place they had fled to for refuge. Burning alive and other cruel modes of death were the penalty of those convicted of this crime. While, therefore, real cases of poisoning were common and frequent, falsely imputed ones were not less so, and were productive of even greater evils.

The open neglect of all hygienic measures, the deluded reliance on absurd charms as prophylactic against all kinds of disease, and the mistaken ideas of mortifying the flesh inculcated by the clergy, had much to do with the origination and propagation of those deadly epidemics which decimated the nations of the middle ages. The people, ignorant alike and superstitious, in most cases attributed these to wilful poisoning of the wells; and the occurrence of an epidemic was the signal for a murderous attack on the unfortunate Jews, who were generally accused of this crime. Many thousands of them were thus massacred. Even as late as 1831, when cholera broke out at St. Petersburg, a similar idea of poisoning the wells was entertained by the people. The following anecdote will illustrate the kind of notions which were entertained in olden times. In the year 1322, a number of lepers were burnt alive for having, at the instigation of the Jews, it was said, poisoned the wells. This they effected in the following remarkable manner. They took some of their leprous blood and urine, and mixed them into a paste with toads and poisonous herbs. This paste they cut into small cakes, which they sank with stones to the bottom of the wells!

A profound faith in universal antidotes against poison was characteristic of this age of the marvellous. This idea, however, did not originate with them, for it forms no inconsiderable part of the works of Nicander, Dioscorides, Galen, and others; and it continued to be spoken and treated of in many learned works up to a comparatively recent period in the history of medicine. One of the most celebrated of the ancient antidotes was that invented by Mithridates, and which was named after him. These *Mithridatia* and *Theriaca*, as they were termed, were variously modified at different periods. They consisted for the most part of an immense number of vegetable extracts and resins; and many works were written, specially devoted to the exact description and modes of compounding the various ingredients of these highly-prized alexipharmics. So late as the middle of the last century, Heberden wrote a special treatise showing their uselessness, and advocating their banishment from the pharmacopœias. More prized in the middle ages were the *Bezoar stones*, first introduced by the Arabian physicians. So much were they valued, that they sold for ten times their

weight in gold. These wonderful stones, of which there were two varieties—the oriental and the occidental—were but the biliary calculi of different species of antelopes, goats, and camels. Amulets and charms of precious stones and coral, which blushed or turned pale when poison approached them; rings that became too hot to be worn; cups that cracked when poison was poured into them; and such like, were equally relied on. Many other agents were employed, based on the idea of curing like by like, or on the equally scientific doctrine of Signatures, which saw, in whatever resembled the noxious substance in form or appearance, the proper antidote against it.

The promulgation of the "Constitutio Criminalis Carolina" in 1533 by the Emperor Charles the Fifth, was the dawn of a new era, and marks the commencement of the science of forensic medicine. The relations of medicine to jurisprudence were distinctly established, and medico-legal investigation by competent men was rendered imperative in the decision of numerous criminal and civil cases affecting the life and property of individuals. Numerous statutes were passed by various states, regulating and restricting the possession and sale of poisons, and stringent enactments were made against the poisonous adulteration of food and drink.

The use of poisons as medicinal remedies was also strongly condemned by many writers and teachers. Antimony was especially prohibited by the universities of Paris and Heidelberg, and candidates for the degree of Doctor of Medicine were, about the middle of the sixteenth century, required to swear that they would never employ this substance in the treatment of disease. These regulations remained in force for many years. They were ostensibly for the purpose of preventing poisoning, but they were chiefly directed against the followers of Paracelsus, who used the mineral poisons largely as remedies. The attention of medical men now became directed to the scientific investigation of the nature and action of poisons, and of the means of detecting and checking their employment. Numerous memoirs on poisons and on subjects of legal medicine were written by distinguished men; and works especially treating of forensic medicine were written by Fortunatus Fidelis (1598), Paul Zacchias (about 1630), and others whom we regard as the fathers of the science. The foundation of a new physiology, chemistry, and allied sciences, led to a gradual emancipation from many absurd ideas regarding poisons. Numerous exact experiments were made on the lower animals, and also on condemned criminals. A sense of humanity gradually put a stop to this latter mode of experimentation; but we, who have derived much valuable knowledge, though often obscured by absurd theories, from these experimenters, must not be too ready to find fault with them. In connection with this mode of experimentation, a name occurs which we commonly associate with a different employment—namely, that of Sir Christopher Wren.

Notwithstanding the general tendency to shake off mere tradition and subject everything to the canons of inductive research, yet many strange things retained their place in the works on forensic medicine in the seventeenth and eighteenth centuries. It was a very common belief, and accepted on the most slender evidence, that there were poisons in use so subtle that they might be conveyed in a letter which would prove fatal to the reader, or inhaled in the fragrance of a bouquet. We might to some extent credit these accounts, if we had grounds for supposing that the poisoners of old were skilful enough to isolate the zymotic poisons—the only poisons we know which can be carried in such a way. Prince Eugene is said to have received a poisoned letter, which, however, he suspected, and immediately threw from him. To ascertain whether his suspicions were well founded, the letter was given to a dog, which was moreover fortified by an antidote. Notwithstanding this, the dog died. Marx, who relates the story, naively asks, "Was not the dog poisoned by the antidote?" We might believe in poisoned gloves, but hardly in poisoned boots, poisoned saddles, and the like.

Pope Clement VIII. was said to have been killed by the fumes of a poisoned candle which was placed in his bedroom. Those who attributed his death to this cause, forgot, or did not know, that at the same time a brazier of burning charcoal was likewise placed in his Holiness' apartment.

A belief in the existence of slow and secret poisons which

could be prepared with such skill, and the dose calculated to such a degree of precision as to cause death at any given period, according to the will of the poisoner, was more prevalent, and has not altogether passed away at the present day. It has descended from very ancient times. Theophrastus speaks of such a poison prepared from aconite which would produce its effects after two, three, or six months, or even after one or two years. The Carthaginians were said to have administered such a poison to Regulus, so that, whether he returned from his mission to Rome or not, he might not altogether escape. And it is related by Plutarch, that one of the Philips of Macedon caused such a poison to be administered to Aratus, King of Sicyon. This is said to have produced a gradual wasting of the whole body, accompanied by hæmoptysis. On one occasion, when he spat blood, Aratus, who believed he had been poisoned, exclaimed, "This is a mark of the king's friendship!"

In more modern times the idea was founded on apparently better grounds, viz., on the effects attributed to the celebrated *Aqua Tophana*. This poison derived its name from Tophana, a woman who resided at Naples at the latter part of the sixteenth century. It was sold in phials, which, in order to escape the scrutiny of the Government officials, were labelled "manna of St. Nicholas," purporting to be an oily liquid of reputed supernatural virtues which was said to flow from underneath the tomb of St. Nicholas of Bari. The name "manna of St. Nicholas" is familiar to all readers of *Kenilworth*, though its mention there is somewhat of an anachronism. From four to six drops of this aqua or acquetta were said to be a fatal dose, and it was asserted that the dose could be so proportioned as to operate fatally at any fixed period after its administration. Tophana, who was convicted in 1707, and subsequently strangled by the orders of Charles the Sixth, confessed to having been the means of destroying six hundred lives. The wonderful effects ascribed to this poison led to many attempts to discover its composition. It was said to be a clear liquid, tasteless, odourless, and easily miscible in all kinds of food and drink. Halle, a writer on poisons, who was gifted with a marvellous amount of credulity, thought that it was a preparation from the foam of men tortured to death; and remarks, that if Italy could have been the parent of such wickedness, "then truly a seed of the forbidden fruit must have fallen in this garden of the devil!" The most probable of the many suppositions advanced regarding the composition of the aqua Tophana is that it was an arsenical solution. In support of this, Hoffman quotes a letter from Gasparelli, physician to the Emperor Charles, in which he asserts that he was informed by the emperor himself (to whom Tophana confessed the secret of her preparation) that it was a solution of arsenic in an infusion of *cymbalaria* or toad-flax. The Abbé Gagliani and Ozanam assert that at least some of the preparations called aqua Tophana contained opium and cantharides. This, however, is not likely, if the aqua Tophana were really tasteless and odourless, as it was generally said to be. The accounts we have received of the effects which followed the administration of this poison would agree, in so far as they are trustworthy, with the symptoms of arsenical poisoning. The most likely explanation of the slow and subtle action ascribed to it, is that it was due to chronic poisoning caused by frequent administration. A similar explanation must be given of the almost equally celebrated *aqua mirabilis* of the Marchioness of Brinvilliers and the *poudres de succession* of La Voisin and Le Vigoureux.

The *aqua mirabilis* of the Marchioness of Brinvilliers was probably of a similar composition to the *aqua Tophana*. The career of this woman is one of the most remarkable in the history of poisoning. She carried on an intrigue with a young officer called St. Croix, which created such scandal, that the father of the marchioness caused St. Croix to be incarcerated in the Bastille. There he fell in with an Italian called Exili, from whom he learnt the art of secret poisoning. St. Croix, when liberated, instructed the marchioness in the art which she afterwards practised with so little scruple. She is said to have assumed the character of a sister of mercy, in order to try her nefarious mixtures on the unfortunate patients in the Hôtel Dieu. She subsequently made away with her father and brother. After a long career of crime, she was beheaded and burnt at Paris 1676. The symptoms recorded in the case of her father and brother would confirm the opinion that arsenic was the chief consti-

tuent of her poisonous compounds. Closely connected with the Marchioness of Brinvilliers were two infamous women, named La Voisin and Le Vigoureux, the former of whom was a midwife in Paris. These women attained a great reputation as fortune-tellers, and were consulted by many eminent personages of both sexes regarding the probable time of death of their husbands or wives, or other obnoxious individuals. Their predictions were often marvellously verified, and no wonder, seeing that they had the fates in their own hands and drove a wholesale trade in poisons. They were ultimately condemned and burnt alive by order of the Chambre de Poison or Chambre ardente instituted by Louis XIV. The poisons they made use of were called *poudres de succession*. To these, also, a slow and secret action was ascribed. Lead was said to form their principal constituent. From what we know, however, regarding acute and chronic lead-poisoning, we should be inclined to attribute the fatal effects to some more active agent, or possibly to the means employed to cure them. Most of the accounts of slow and secret poisoning are therefore manifestly fabulous, or are susceptible of such an explanation as given above. With the exception of the zymotic poisons and the hydrophobia-virus, which may long lie dormant in the system before producing their effects, but which we have no reason to believe were even isolated or employed by the most skilled poisoners of old, we have nothing to warrant the assumption that such slow poisons ever existed except in the minds of the credulous. The existence, however, and frequent use of such poisons even at the present day, is maintained by a recent writer in a medical journal. He states that the Thugs of India possess and employ a slow poison called *tophayne*. And that poisons may be conveyed in letters which will prove fatal to the reader is considered probable, from the recent sudden death of two individuals after reading anonymous letters—one of these cases occurring in Canada, and the other, that of General Cngia, at the last Carnival in Rome.

Unless better evidence be brought forward than examples like these, we must regard conclusions from such a data as manifestly worthless. Thanks to the knowledge which we now possess of the natural history of disease, and to the perfection of the means of detecting poisoning, together with the restrictions that are put on the sale of poisons, the crime is becoming more and more rare, and cannot, even in the most skilful hands, long remain undetected. Fortunately, those who have it most in their power are those who have been least guilty of it, with some few noted and universally execrated exceptions. Medical men have been in general true to their Hippocratic oath, and are ready to echo the sentiments of the surgeon in the army of Napoleon, who, when requested to poison five hundred unfortunate invalid soldiers whom it was inconvenient to take with the army or to leave behind, indignantly exclaimed, "Neither my principles nor the dignity of my profession allow me to become an assassin!"

Medical Gleanings.

NO doubt the most important medical event of the month is the victory gained by Miss Jex Blake and her nine companions over the Senatus of the Edinburgh University in the Scotch Court of Session. In fact, we may, from one point of view, describe it as one of the most important events since the flood. If this decision be accepted as final, or if not, if it be confirmed by a higher court, it evidently leads to the fall of all those barriers which prevent the full and free competition of women with men. What may be the ultimate result of such an inundation on our professional markets it is not easy to forecast. Thackeray said that, by a merciful arrangement of Providence, women were like horses, in the fact that they were unconscious of their real power. What if they are now about to discover it? What will be the consequences to the arrogant but intrinsically inferior race which has so long held sway? To put the question in a concrete form, we want to know what chance any half dozen doctors would have of getting a living in a country town if one lady M.D. were to establish herself. One of them might, perhaps, make friends with the mammon of unrighteousness by marrying her, and the rest would have to become "hewers of wood and drawers of

water;" and though we feel ourselves to be in the same sinking boat, we can scarcely resist a sickly smile as we see the medical hosts awaiting their fate in frantic confusion, too well aware that the calm and persevering march of Miss Jex Blake and her friends forbodes more than appears on the surface. *Fiat justitia, ruat cælum*, however, is, or ought to be, Britain's motto, and if any one will, for an instant, extricate himself from what the Lord-Ordinary happily terms "the deadening effect of habit," he will find himself puzzled to give the fraction of a logical reason why less than one-half of the population of this planet should arrogate to itself the right of laying out its own work and that of all the rest of the inhabitants. It is perfectly competent for any individual to disapprove of women-doctors, if they think fit; but this is quite apart from the question. Miss Jex Blake has as much right to live in this world as either Messrs. Brown, Jones, or Robinson; and, if so, it seems to us that she has also an equal right to select her profession regardless of Messrs. Brown, Jones, or Robinson's approval or disapproval. This we take to be a matter of abstract justice, and we are therefore pleased to observe that the Lord-Ordinary has now decided that, in this case, legal justice coincides. As the matter stands, therefore, Edinburgh University is required to give to ladies such medical instruction as they may require, to admit them to all the examinations, and to confer upon them such degrees as they may fairly win.

The following passage from Lord Gifford's *note* is interesting:—

"It is a fact, whatever may be its effect in law, that no University in Great Britain has ever granted a medical degree to a lady. The Medical Register of Great Britain only contains the names of two female practitioners—Dr. Elizabeth Blackwell and Dr. Garrett Anderson. Dr. Blackwell obtained her degree in America, and, being in practice in Great Britain before 1858, she obtained registration in virtue of the exception in the Act. Dr. Garrett Anderson obtained a licence from the Apothecaries Hall, London, and is registered as such; but since her admission regulations have been made which prevent any other lady from hereafter obtaining a licence from the Apothecaries' Hall. Accordingly, the course pursued by Dr. Blackwell and Dr. Anderson is not open to any of the pursuers, and their only hope of being allowed to practise medicine in Great Britain rests upon their being able to obtain a degree from one or other of the Universities."

The other ladies practising medicine in England hold degrees from foreign universities, and are therefore not eligible to be admitted to the Medical Register, cannot recover fees, cannot hold an official appointment, and are simply in the position of quacks.

Recently the Birmingham and Midland Hospital for Women advertised for a resident medical officer, and offered the appointment to qualified ladies as well as gentlemen. The result of the competition has been the election of Miss Louisa Atkins, who recently obtained the degree of Doctor of Medicine at Zurich.

Readers of the *Lancet* will not need to be told that in the correspondence columns of that journal there are to be found constantly the most childish and disgraceful quarrels between neighbouring practitioners who have offended each other. The code of professional ethics and etiquette, of which so much is made, is "one of those things which no fellow ever can understand;" but this code is perpetually appealed to by the querulous and cantankerous and jealous of the profession, and strange to say, a journal can be found which is willing to become the medium for such silly scandal. Take this one specimen, which we extract, because it is short, and not because it is specially ridiculous. It is one of a series written by two practitioners in a country town. We omit names, because we are not sure but that it would be libellous to help these gentlemen to make themselves look foolish:—

Sir,—Since Mr. A. B. has so positively denied (!) ever having treated me uncivilly, or ever having behaved to me and to my patients unprofessionally, I shall deem it proper to treat this and all others of his communications (whether through the medium of your journal or otherwise) with the pure contempt and disdain they deserve. I have only to add, in justification of my conduct to him personally, that the treatment I have received from

him ever since he has been in this place has alone called it forth.

"Yours obediently, C. D."

Surely, C. D. can never have read of the immortal medical quarrel which took place at Mr. Bob Sawyer's party, or of that other equally celebrated one between other two members of the same profession, Sairey Gamp and Betsey Frig, or he would hardly take the trouble to realise the novelist's fiction so graphically. Who on earth with a mind bigger than a thimble cares what C. D. thinks of A. B. The "administrators" of the *Lancet* may find it desirable to interest those whose minds are less than the dimensions indicated. They must know that they are augmenting, if not creating, the evil, and yet they have the audacity to write a sermon to their flock, in which they patronisingly advocate "Scriptural and Professional Ethics," and also heroically remark that they would "willingly be relieved of the painful duty of deciding between those who should have no differences; but it would be Utopian to expect such a millennium yet."

An action for libel has been floated in Vienna against the *Gazette Medicale* of that city, the complainant being Professor Billroth. This eminent gentleman has recently had a patient die under chloroform while under his treatment. The editor of the *Gazette* takes the opportunity thus afforded of reviewing former unsuccessful operations of the same celebrated surgeon, among which are enumerated an exactly similar case under corresponding circumstances; another chloroform death during his examination of a wounded finger; that, on another occasion, he tied the lingual vein instead of the artery; perforated the bladder in a lithotomy operation, etc., etc. The journal remarks, that if such errors occurred in the case of a provincial practitioner, imprisonment would be the result. Professor Billroth has instituted an action for libel in order to vindicate his professional character.

Mr. Denkin, House-Surgeon to the Lock Hospital, recently summoned Mr. John Hamilton, who practises medicine in another street altogether, who is, in short, a tolerably well-known quack, for having used the title of "doctor" without being strictly entitled to that distinction. The prosecutor, for some unexplained reason, did not appear, and therefore the decision went for the defendant. This decision, however, was chiefly remarkable for the opinion which the magistrate—Mr. Mansfield—took occasion to express, "that a person might call himself a doctor the same as a captain, if he pleased." The magistrate was probably right in a strictly legal sense, but it might have been as well if he had indicated at the same time that there was a moral law which prohibited the assumption of that which has not been honestly acquired.

Dr. Nelaton, the eminent French surgeon, is reported to be in failing health, caused by an internal tumour which cannot be reached or cured. In the patient expectation of death, the afflicted gentleman beguiles the time by translating the "Odyssey."

The city of Springfield, Mass., has chosen Miss Sarah G. Williams, M.D., as city physician.

The lectures in the Rush Medical College, Chicago, were resumed on the fourth day after the great fire. Their own building was totally destroyed.

A. T. Stewart, of New York, had his entire establishment, consisting of eight hundred persons, vaccinated by the Health Department Inspectors recently.

The Legislature of Kentucky has passed a bill making opium eaters and devotees of arsenic, hasheesh, etc., liable to inquest, guardianship, and incarceration in lunatic asylums.

Here is a "motto song" which is cut from the (*American Eclectic Medical Journal*), and which conveys a lesson encouraging to every recruit in the great army which has to fight the battle of life:—

"They say the professions are crowded
By seekers for fame and for bread,
That the members are pushing each other,
As close as their footsteps can tread.
But be not discouraged, my brother,
Nor suffer exertion to stop,
Though thousands are pressing around you,
There's plenty of room at the top."

A modest reader wants to know the meaning of the Apothecaries' Society's motto. We like to do the thing

handsomely when we are about it, so we throw in a few other translations as well:—The Royal College of Physicians takes its motto from Hippocrates, *Ὁ βίος βραχὺς ἡ δὲ τέχνη μακρὰ*—"Life is short and art is long." The Royal College of Surgeons takes *Quæ prosunt omnibus artes*—"Arts that serve all men;" the Society of Apothecaries makes Apollo's boast its own, *Opiferaque per orbem dicor*—"Over all the world I am called the help-bearer." The Pharmaceutical Society has the motto, *Habenda ratio valetudinis*—"Regard must be had to the state of health."

ITCH.

PERHAPS we ought to apologise for the Anglo-Saxon distinctness of the title of this paper, which, however, is intended for use—not for pretty reading. To chemists and druggists the treatment of itch becomes a somewhat frequent duty, and a perfectly legitimate one. If we fell in with the very loftiest notions, that pharmacists had no right to treat disease at all, we should still claim for them the inalienable right of ministering to those who were annoyed with *acari*; for it is merely an outrage of language and reason to include itch among diseases. Fleas, mice, creditors, and poor relations might just as sensibly be classed under diseases. Our intention just now is to quote some important remarks on itch, which have recently appeared, but we think it desirable to preface these with a concise statement of what we know about the *acarus* and its labours.

Itch is characterised by an eruption of pustules or of small vesicles, the two being frequently intermixed, and accompanied by an intolerable itching; whence it derives its name. It has been divided into different classes; but the distinction is of no practical importance. It occurs chiefly about the fingers and wrists, and the flexures of the joints; but it may also attack other parts of the body, the face being the only part on which it never appears. It is caused by a minute insect—the *Acarus* or *Sarcoptes scabiei*—lodging under the skin, and is readily communicated by contact. The only proof of the existence of itch is the presence of the insect, and this is readily detected by means of the microscope.

The female *acarus* lives on an average three or four months, and can lay forty or fifty eggs if she is prosperous in business and lives out her allotted days until adolescence. The egg turns into a youthful *acarus* fourteen days after it is deposited. The masculine insect lives in vesicles or short burrows in the skin, while his companion makes long canals. She roots in through the epidermis, and when she comes to the rete mucosum obtains ample food, and then bores away along in the skin forming this canal, in which she lays her eggs as she goes over the territory selected. The disease cannot be communicated with triturated *acari* or the contents of the pustules or vesicles, showing the theory, that the itch insect carries a specific poison into the blood, to be unfounded. The *acarus* is very active under the influence of heat, and quite benumbed with cold; hence, when the hands and body are covered up warm in bed, the animals enjoy themselves the most and move around the more nimbly, and consequently produce greater itching. Relapses of the disease often occur after a cure is effected, simply by the patient putting on some of the garments or bed-clothing he may have used while he had the disease. Some of the crusts in which the *acarus* may for the time being be dormant, getting in this way in contact with the skin again, so that what is sometimes thought to be a "driving out" of repelled scabies, is only a fresh attack of the disease.

Sulphur is usually regarded as the great specific for this disease. It is commonly used in the form of an ointment, smeared over the parts once or twice a day, washing them carefully with soft soap and hot water for some time before each application. This is so necessary to cure, that some hold that it is principally owing to the action of the soft soap. The following ointment is also recommended: two parts of sublimed sulphur, one part of sub-carbonate of potash, and eight parts of lard. This usually takes from six to eight days to effect a cure. The following ointment, however, is said to effect a cure in four days, viz., recent grains of staphisagria, in powder, three parts, by weight, and boiling lard, eight parts, digested for twenty-four hours at a temperature of 100° in a sand-bath, and strained. After a cure is effected, care

must be taken to destroy the insects and eggs that may be among the clothes of the patient. If these are not destroyed, they should be exposed to a temperature of not less than 180°, by being put into an oven, or into hot water, or by ironing them with hot iron; or they should be well fumigated with sulphurous acid gas, which may be formed by igniting a rag dipped in melted sulphur.

Now we give some remarks on the treatment of itch by Dr. Tilbury Fox, which that eminent physician has published in the *Lancet*. He says:—

We talk of papular, vesicular, and pustular scabies; whereas the scabies itself is only the acarus in its burrow—the cuniculus with the vesicle at one end (the result of effusion set up by the entrance of the acarus), and the embedded acarus, showing itself as a white opaque speck, at the other end. All else is merely secondary to the irritation set up and the scratching practised for its relief. The papules are erected and congested follicles, the pustules suppurating follicles; and these papules and pustules occur as a part of many other diseases in which the skin is subjected to severe irritation. Kill the acari, and the secondary eruption disappears of course. But what do we do usually? We treat, not only the essential disease, the real scabies—namely, the acarian furrow and its imbedded ova and acari—but also the secondary results in the same manner, applying to them the same parasiticide. Yet we should treat the former by parasiticides and the latter by soothing remedies; the more so as we know that the acari are generally to be found in certain localities. In recent cases in adults the localisation of the acari to the interdigits and the region of the wrist is complete; and it is easy to do harm by intensifying the secondary irritation, though the original cause (the acari) may be destroyed by our remedies. Therefore, I say, in recent scabies use the parasiticides, *sulphur* or *stora*, *petroleum*, *benzine*, or the like, to the wrists and interdigits, and simple unguents to other parts. In chronic scabies the case is different, for here the acari may be more or less ubiquitous as regards the body. But even here a distinction is to be made; the parasiticide should be applied to the small and fine rash, and not to the ecthymatous pustules.

Error number one, then, in the treatment of scabies, which is often made, is the application of parasiticides to the wrong place. We need only use half a drachm of *sulphur* to the ounce of lard; there is no occasion for a stronger ointment nor for *hellebore* ointment. Gentle friction for a long time with a milder preparation is all that is required. Error number three is the use of parasiticides for too long a time. The use of a parasiticide for two or three days should be followed by a good washing and the discontinuance of the remedies for a night. If the patient be not troubled with itching during the night he may conclude that the acari are killed, and all we need do is to guard against the hatching out of fresh acari by the light application of our parasiticide once a day to any "pimply" places for a few days longer, taking care that the foul clothes are well heated or scalded. It often happens that the remedy used to destroy the acari is continuously used until it sets up on its own account severe irritation, which is mistaken for an increase or spread of the scabies. "Not too strong and not too long" is my rule for the use of remedies in scabies. The occurrence of red, rough, erythematous patches is a sign that the remedy itself is creating a disease.

I do not like *sulphur* baths. Don't use them in recent cases; you need only treat the hand with parasiticides. In our new baths we shall cure our patients at a sitting, and disinfect their clothes at the same time. But in private practice you must follow the old-fashioned plan. I prefer, for ordinary use, an ointment made of half a drachm of *sulphur*, five grains of *white precipitate*, ten drops of oil of *chamomile*, five drops of *creasote*, to one ounce of lard. For chronic scabies *sulphuret of potassium* baths or an *iodide of potassium* lotion, one drachm to six ounces of water, are good; but I like the first-named remedy as well as any. Should we disinfect the clothes? Yes, by strong heat. I cannot prove to you that the clothes convey infection; but I believe it better to be on the safe side.

In the *British Journal of Homœopathy* we find a practical article on "Remedies for Itch," which has been translated from the German of Professor von Rothmund, of Munich. His ideas are to the following effect:—

The remedies hitherto in use for itch, such as Wilkinson's sulphur ointment, Hebra's tar soap, Vlemingx's solution, &c., are not to be compared for certainty, rapidity, and pleasantness of cure with *styrax* and *Peruvian balsam*. *Styrax* was first recommended in itch in 1865, by von Pastau, of Berlin. It has shown itself a most efficacious remedy, due to its containing cinnamoin, cinnamomic acid, and resin. It is used as a mixture:—*Styrax* ʒij, *Ol. olivar.* ʒij; or thus, *Styrax* ʒij, *Alcohol* ʒss, *Ol. olivar.* ʒij. *Styrax* is a good and cheap remedy, its only disadvantage being its very disagreeable smell. For children it is used in the form of soap. *Balsam of Peru* is even better than *styrax* for the cure of itch. It was first employed in 1853, by Bosck, and was strongly recommended by Bärensprung in 1864, on the strength of an extensive trial of it in the Charité Hospital of Berlin. Its component parts are cinnamoin, cinnamomic acid, and resin. *Balsam of Peru* is preferable to all the other vaunted remedies, because the acarus scabiei is most rapidly killed by it; because it acts with rapidity, with certainty, and agreeably; because it does no injury to the skin; because it easily penetrates the skin; because baths are not absolutely necessary with it, and because it kills all the acari and their eggs, for when well rubbed into the skin it comes in contact with the eggs. As a remedy for children it is superior to all others. The children are first placed in a warm bath, then well dried, and forty drops of the balsam rubbed well in. This is to be repeated four or five times in the next twenty-four hours, and the cure is complete. It may be used in every form of itch in children with advantage. It has, to be sure, no effect on the eczema scabiei; for this, soap baths, starch powder, or glycerine inunctions, are required. In adults the best plan is to rub in the *balsam of Peru* all over the naked body, slowly, carefully, and gently, giving special attention to certain parts of the body, especially the fingers. Although in the treatment of itch the rubbing-in cannot act mechanically, yet, whatever substance may be used, the mode of preparing the inunction is of great importance. As the balsam is readily distributed, nine grammes of it suffice for one operation. It is not at all necessary to begin the treatment with a bath; but if a bath is first given the rubbing-in should not follow the bath immediately, as the balsam is more readily absorbed by a dry skin. Hence, in persons who easily perspire the skin should be well dried before the remedy is used. When the operation is carefully performed relapses occur very rarely, and there is never any increase in the eczema that may be present. It is seldom that prurigo occurs after the itch. Should it occur, this disagreeable symptom is more readily removed by the internal use of *carbolic acid* than by warm baths and soft soap or glycerine. The only objection to *Peru balsam* is its expense. *Carbolic acid*, on account of its efficacy, its facile employment, and its cheapness, deserves to be mentioned next to *Peru balsam*. It must be mixed with glycerine or oleum lini to prevent its caustic action. One scruple of *Acid. carbol.* is to be mixed with two ounces of either of the other two excipients. This remedy has this advantage, that by its action on the peripheric cutaneous nerves it completely removes and prevents the morbid itching, prurigo, and pruritus. In cases of prurigo or pruritus, independent of itch, the internal use of *Carbolic acid* in the form of pills is an excellent remedy. As the *Carbolic acid* gets pretty quickly into the circulation, it is necessary to give it in very moderate doses, especially where there are parts destitute of epidermis. But as thereby its action is delayed, it is better to employ the *Carbolic acid* in the form of a salt. According to Rothmund, *Natrum carbolicum* supplies all the requirements of a good, rapid, and certain itch remedy. The following is the best way of using it:—℞. *Natr. carbol.* 15 oz., *Aq. destill.* 180 oz. With this the affected portions of the skin are to be rubbed three times a day, and even in the most inveterate cases the treatment never lasts more than two and a half days; relapses are not to be feared, and if the rubbing-in is carefully performed no erythema to speak of occurs. During the treatment the patients are in no way hindered from following their usual occupations. One advantage of the *Peru balsam* and *Carbolic acid* treatment of itch is that it is not necessary to disinfect the clothes or bed-linen. In order to make sure, Rothmund recommends an additional rubbing-in to be made some eight or ten days after the cure of the itch, in order to kill any acari or their eggs that may have lurked among the clothes or bed-linen.

THE SUPPLY OF DRUGS, ETC., TO WORKHOUSES

A VALUABLE report has just been issued by F. W. Rowsell, Esq., Superintendent of Contracts, Admiralty, relative to the system of supplying goods to the several workhouses of the metropolis; and we extract from the report such information as will be interesting to chemists and druggists. A series of questions were asked the authorities of the several unions, which elicited the fact that, generally speaking, the medicines and drugs supplied for the use of the inmates are obtained from excellent sources—viz., from some first-rate drug-dealer in London whose name and standing are sufficient guarantees for quality. There are, however, it is stated, a few exceptions, in which it would appear that local considerations prevail, and that the guardians are more desirous to provide for the "good of the parish" than for the quality of the drugs, when arranging for the dispensary supplies. Mr. Rowsell states, however, with reference to this matter, that he does not intend to insinuate that the local chemists and druggists do not supply drugs, etc., of good quality; but that "their position is not such as to make it vehemently improbable that they should sell some inferior articles; and I have reason to know in some instances that medicines thus supplied have not given satisfaction to the medical officers." It is certainly of the utmost importance that Poor-law guardians should adopt every means to ensure the perfect good quality of their drugs, and therefore the remark of Mr. Rowsell, which we have just quoted, cannot be considered as altogether satisfactory. He further writes:—"In providing medicine for the Navy it has been found desirable to deal only with first-rate houses, as most of the Boards of Guardians do, and to revise prices quarterly by the light of published price currents. It does not appear that this revision takes place at all the workhouses who deal with the best firms. It certainly should do so, as the price of certain drugs—e.g., opium preparations, varies according to markets within a range of 35 per cent. Occasional competition even amongst the best houses is a desirable thing, so as to prevent a contract rusting, and to keep prices in check." We also learn the peculiar fact that at some unions it has been discovered that the medical supply arrangements have been unaltered for fifteen to twenty years. Mr. Rowsell also states that surgical appliances seem to be had in quite small quantities, but from good sources; and he points out that at some of the unions, as well as at certain hospitals, Tarragona wine is used instead of port for medicinal purposes.

The following are a few of the answers and replies thereto at the Bethnal Green Board of Guardians:—By what means are medicines and surgical appliances supplied? By simple purchases, not by contract. Who judges of samples? Board of Guardians. At Camberwell Union it was stated that the drugs and medicines are obtained from Messrs. Corbyn and Co., of High Holborn, but they are not supplied under contract. The drugs to the St. Luke's parish (Chelsea) are supplied by the Society of Apothecaries, and the surgical appliances by tradesmen in the neighbourhood. The guardians of the City of London unions obtain their medicines "by arrangement" with Messrs. Baiss Brothers, and their surgical appliances from Messrs. Maw and Sons. The Fulham Board of Guardians are supplied with their drugs by the wholesale chemists in town, who supply the medical officers direct on order from the guardians. Surgical appliances are supplied by Messrs. Hughes and Co., of Holborn, to whom the patient is usually sent at the expense of the parish. This method of purchasing drugs, etc., appears to prevail also at the Greenwich, Hackney, Hampstead, Holborn, and all the other unions. We may mention, however, that Messrs. Corbyn and Co., of Holborn, supply the Hampstead Union with medicines. The Islington guardians assert that they obtain their drugs from "old-established, well-known, and respectable wholesale dealers, at the prices stated in their printed price-lists, which are published monthly." The guardians of the Lambeth Union get their drugs from Messrs. W. V. Wright and Co., of Southwark-street, but not by contract. The guardians here have never yet contracted for drugs. Messrs. Foulger and Son, wholesale druggists, of St. George's-in-the-East, supply the Mile-end Old Town Workhouse with all medicines and medical appliances, not by contract, as they do also St. George's-in-the-East parish. The guardians of St. George's Union purchase their

drugs from Messrs. Wright and Co., in accordance with their monthly price list, receiving a discount of $7\frac{1}{2}$ per cent. Apparently the St. Pancras Workhouse is the only one for which the medicines are obtained by direct contract. Mr. Norburn, chemist, supplies the Shoreditch Union, but not by contract; and the guardians of the Strand Union purchase their drugs from Messrs. Herrings and Co., wholesale druggists, and their surgical instruments from Messrs. Maw and Son, or specially from some other house indicated by the board.

Chemistry and Pharmacy.

PULVERIZING CAMPHOR.

The *Polytechnisches Notizblatt* suggests that if a few drops of castor oil be added to the alcohol employed, in the proportion of 1 to 24 or 30, the camphor is much more easily reduced to powder.

PREPARATION OF COLLODION COTTON.

In the same journal Prof. A. Vogel has an article on this subject. If the sulphuric acid employed in the manufacture of gun-cotton for collodion contains any considerable quantity of nitric acid, a smaller amount of saltpetre must be employed, otherwise the collodion-film made from it is opaque and unfit for photographic purposes. If the sulphuric acid is free from nitric, equal weights of acid and saltpetre are taken. When more than 30 grammes of cotton are prepared at once, its optical properties seem changed; the same is the case if ammonia instead of alcohol is used to wash out the last trace of acid.

ARSENIC IN LAMP SHADES.

A German doctor has described two cases in Jena, and one in Frankfort, where persons using green glazed paper shades were attacked with symptoms of arsenic poisoning. In no case did the symptoms cease until the use of the shade was discontinued. The heat of the lamp volatilizing the arsenic renders the small quantity present very dangerous.

ADULTERATION OF WAX BY TALLOW.

In a recent number of the *Journal de Pharmacie et de Chemie*, M. Hardy informs us that tallow is frequently used to adulterate wax. He proposes the following plan whereby to detect the sophistication:—

Alcohol of 29 degrees has the same specific gravity as wax, and therefore pure wax when placed in it will remain suspended. If an alcohol which will hold a specimen of the suspected wax in suspension shows a higher number of degrees, some tallow has doubtless been added. Thus an alcohol

Marking	29°	degrees	represents	wax	100	tallow	0
39.63	"	"	"	75	"	25	
50.25	"	"	"	50	"	50	
60.87	"	"	"	25	"	75	
71.80	"	"	"	0	"	100	

TESTING BLEACHING POWDER.

Mr. S. Cubot, Jun., of Howell, Massachusetts, writes to the editor of the *Chemical News* that he has found it very convenient, in the determination of chlorine in hypochlorite of lime (bleaching powder), to use an acid normal solution of ferrous sulphate, and attach to the bottle, by a copper wire, a rod of zinc, which is immersed in the solution before using it, and reduces the ferric sulphate, that has been formed by the action of the air, to its pristine condition. In this way he believes a normal solution might be used for years. Of course it can be used equally well for the titration of any other oxidizing agent, like permanganate of potash or bichromate of potash.

EXTRACT OF HOPS.

Prof. C. A. Seeley, of New York, has patented in the United States and England, an improved process for extracting the useful substance of hops and for manufacturing a pure and concentrated extract of hops. The invention is based on the discovery that the ordinary petroleum oils are rapid and complete solvents of the essential oils and of the bitter matter of hops. At the same time they have no solvent action on the other constituents of the plant, which in practical operations are either useless or hurtful. The improved process consists in steeping the hops in petroleum oil and then by heat, stirring, digestion and percolation, promoting the sol-

vent action of the oil. When the extractable matter of the hops has been thus dissolved, the solution of hop extract in oil is separated by filtration from the refuse matter, and the solvent is volatilised or distilled off by heat, the extract thus being obtained free from the solvent and other foreign matter. The kinds of petroleum oil proper for this purpose are naphtha and gasoline, and are the lighter and more volatile parts of crude Pennsylvania petroleum. Although any petroleum oil which has a boiling point below 212 degrees Fahrenheit, may be used, a gasoline which boils at about 100 degrees Fahrenheit is preferable, because at that temperature the essential oil of hops will not escape from the extract solution when distilling the solvent. The apparatus employed in manufacturing the solution and distilling the solvent is such as is suitable and well known for use when bisulphide of carbon, ether, hydrocarbons, or alcohol is used for analogous purposes. The extract of hops prepared as we have described is of a pasty consistency, more or less thin in proportion to the essential oil contained in it. It is soluble in water, but slowly, and only in small quantity. In order to increase its solubility in water, and to give it a more convenient consistency for measuring and transferring, sufficient alcohol is added to give it the consistency of thin syrup. This is probably the best form for a commercial extract of hops. This hop extract differs in some important respects from the extracts of hops hitherto known, and is therefore a new commercial product. It contains all the matter of the hop plant which it is desirable to use in the preparation of beer, while the saline and albumenoid substances found in all alcoholic and watery extracts are wholly absent from it. The extract in its simple form is solid when cold, pasty when warm, and quite fluid at the boiling point of water.—*American Chemist.*

A RAPID METHOD OF PREPARING MERCURIAL OINTMENT.

M. Lucien Lebeuf states that the following process yields a preparation in all respects identical with the mercurial ointment of the Codex.

Take of Ether	4 grms.
Benzoin	20 "
Oil of sweet almond ..	5 "
Dissolve and filter.	

Put one kilogramme of mercury in a wide-mouth glass stoppered jar of five to six times capacity of the mercury and tincture. Add the tincture and shake briskly, from time to time removing the stopper to allow the vapour of ether to escape. When the mercury has been reduced to an exceedingly fine powder, decant the major part of the supernatant liquid, and again shake vigorously until a grey mass is obtained, having the consistency and unctuousity of an ointment. This stage of the preparation is a very important one, and care must be exercised, as the more mercury is divided the less time will its extinction in the fat require. Take then 920 grammes of lard and 80 grammes of wax, and melt them together with a mild heat. When the mixture is cold, put a little of it in a mortar, and put on it the divided mercury. Immediately triturate vigorously, rinsing frequently the bottle which has contained the mercury with a part of the decanted tincture, adding it each time to the contents of the mortar. After a vigorous trituration, the ether should be evaporated and the mercury extinguished. The remainder of the lard may be now added, and the whole well triturated for fifteen to twenty minutes.—*Revue de Thérapeut. Méd.-Chir.* Feb. 1, 1872, in *New Remedies.*

IMPORTANT RE CHLORAL.

Dr. Liebreich, in the third edition of his treatise on chloral, calls attention to the fact that, if the drug produces excitement in a patient, the same dose will have a hypnotic effect after treatment with carbonate of soda. When the blood is alkaline the chloral is readily changed into chloroform.—*British Medical Journal.*

PARAFFIN.

Not long ago, the whole stock of paraffin wax in the world did not exceed four ounces, which was carefully preserved in the laboratory of Professor Liebig as a chemical curiosity. There is now produced in Scotland alone a quantity of not less than 5,800 tons annually.

PRESERVATION OF BODIES BY CARBOLIC ACID.

Prof. Guillery has demonstrated anew the powerful antiseptic properties of carbolic acid, in some recent experiments. He enveloped a fresh cadaver in a cloth saturated with a solution containing 2 per cent. of the acid, and after an interval of four or five days poured more of the solution over the body. By this treatment putrefaction was entirely prevented, the body, after six months, presenting no signs of decomposition, and being but little altered in appearance. At the Morgue, in Paris, a solution containing one-twentieth of 1 per cent. of carbolic acid, sprinkled over the bodies, arrested putrefaction even during the heat of summer. Chlorine had previously proved ineffectual to disinfect the atmosphere of the dead-house.

EXPERIMENTS ON COMMERCIAL IODIDE OF POTASSIUM.

In the *Pharmaceutical Journal*, Mr. W. B. Bishop, a student in the laboratory, reports some experiments with samples of iodide of potassium obtained promiscuously which seem to prove that notwithstanding its high price at the present time, and the consequent temptation, there is reason to judge that it is invariably remarkably pure, and at least free from adulteration. Ten samples were experimented upon, and the lowest percentage of iodide of potassium in the dry salt was found to be 98.6. In no case was any appreciable quantity of bromide found. We quote the following from Mr. Bishop's paper, descriptive of the method of volumetric estimation, proposed first by M. Lepage, and apparently simplified by the author.

"The method he (M. Lepage) adopted is based upon the property possessed by perchloride of mercury of precipitating the iodide to the exclusion of the bromide, the bromide of mercury being soluble in water. After having ascertained by previous tests that the iodide under examination is free from chloride, carbonate and iodate, 1 gram of the iodide is dissolved in 30 c.c. of distilled water. A solution of 1 gram of perchloride of mercury in 20 c.c. is also prepared, and the latter dropped from a burette into the solution of the sample to be tested until it ceases to form a precipitate. If the iodide be pure, 16 c.c. of the solution are sufficient for this purpose. From the above data may be calculated the real amount of iodide in the solution. To detect the bromide in the supernatant liquid, it is left some time at rest, then decanted on to a filter so as to obtain it perfectly clear. This is then evaporated in a capsule till its volume is reduced to about 20 c.c.: after cooling, it is poured into a tube and mixed with a few drops of a solution of perchloride of iron. On boiling, the vapour of iodine is given off, and may be easily recognised by placing at the mouth of the tube a piece of starch paper. When the last traces of iodine have been expelled, the solution is filtered, and the clear liquid mixed with a little chlorine water, which sets the bromine at liberty and colours the solution strongly yellow. On agitation with a few grams of sulphide of carbon, the bromine is removed and furnishes a yellow solution in which it can be recognised by the usual tests. This process will answer under careful manipulation, and is at first sight a promising one, but it has some defects which interfere with the accuracy of the results obtained by it. In the first place the iodide of mercury does not settle very readily, and even by filtration it is very difficult to remove the suspended red particles. It is, moreover, rather troublesome to have to filter a liquid two or three times on the addition of each drop of the test, and certainly leads to loss. There can also be little doubt that the mercuric iodide is not by any means insoluble in the alkaline chloride and bromide retained in the mother-liquor, and thus another source of error is introduced. A more convenient method consists in the employment of a standard nitrate of silver solution in the place of perchloride of mercury. A weighed quantity of the iodide of potassium is dissolved in a little water, and I find a stoppered bottle the most appropriate vessel in which to perform the experiment, as the liquid may be more conveniently shaken in it. The standard solution of nitrate of silver is then run in from a burette, taking care to shake well after each addition. When nearly enough has been added, the precipitate will be seen to coagulate and fall to the bottom. Enough nitrate of silver solution is added to make the supernatant liquid perfectly clear."



COLONIAL BUILDINGS, CANNON-ST., LONDON, E.C.

Advertisements, Remittances, Subscriptions, Orders for Copies, and all communications must be addressed to "THE PUBLISHER" of THE CHEMIST AND DRUGGIST.

Cheques and Post-office Orders to be made payable to Edward Halse, and crossed Martin & Co.

No one is authorised to collect money without production of the Proprietors' lithographed form of receipt.

Receipts not forwarded for sums under 10s., unless the remittance be accompanied by a stamped envelope.

SCALE OF CHARGES FOR ADVERTISEMENTS.

One Page £5; Half Page £2 15s.; Quarter Page £1 12s. Special Rates for Wrapper, and the pages preceding and following literary matter. The above Scale of Charges will be subject to a discount of 10 per cent. upon Six, and 20 per cent. upon Thirteen insertions. Seven Lines and under, 4s. 6d.; every additional Line, 6d.

Advertisements of Assistants Wanting Situations (not exceeding 12 words) inserted at a nominal charge of 1s. each.

All Advertisements intended for insertion in the current Month must be sent to THE PUBLISHER of THE CHEMIST AND DRUGGIST on or before the 12th, except Employers and Assistants' Advertisements, which can be received up to 10 a.m. on the morning previous to publication.

Subscribers are requested to observe that, for the future, the receipt of THE CHEMIST AND DRUGGIST in a Green Wrapper indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

An edition of THE CHEMIST AND DRUGGIST is printed on thinner paper expressly for foreign circulation. The Journal is mailed direct from the Office to its subscribers in every part of the world; but subscriptions may be paid and advertisements arranged with any of the following

FOREIGN AGENTS.

ADELAIDE.....	MESSRS. Faulding and Co.
BOSTON, U.S.	Office of "Boston Journal of Chemistry."
CALCUTTA.....	Bathgate and Co.
DUNDEE.....	Kemphorne, Prosser, and Co.
MELBOURNE.....	Folton, Grimwade, and Co.
MONTREAL.....	Evans, Mercer, and Co.
NEW YORK.....	Mr. P. M. Sherwood, 85, Liberty-street.
PARIS.....	P. D. Orvis, 3, Rue Scribe.
PHILADELPHIA ..	W. M. Dickson, 619, Walnut-street.
SAN FRANCISCO ..	MESSRS. Redington, Hostetter, and Co.

Terms for Advertisements over the Leaders may be obtained on application to the Publisher.

THE CHEMISTS' AND DRUGGISTS' DIARY AND PHARMACEUTICAL TEXT-BOOK FOR 1873.

Advertisements for the above work should be sent in immediately. It is partly finished, and must be completed early in September in order to supply the foreign demand, which has largely increased year by year.

The next issue will be a handsome and most useful volume, and will be in daily use from the commencement of the year to its close in thousands of pharmacies. Therefore it must be a specially valuable medium for advertisements to the trade.

A few special positions are for disposal, but early application is indispensable.

For all particulars address the Publisher, 44a, Cannon-street, London.

DOMESTIC FILTRATION.

"WITH regard to the Silicated Carbon Filters, I have made many experiments upon them, and have been astonished at the energy and rapidity of their action. I passed through a small Filter of this make some of the worst description of water supplied by the London Water Companies, and found it, after filtration, to have become as pure as the very best London water. My experiments show that the Filter exercises a decomposing action—a chemical action—on the Organic Impurities in Drinking Water. I have no doubt that Water, which is dangerous from the Organic Matter contained in it, becomes safe on passing through the Silicated Carbon Filter. A point of some importance, shown by my experiments, is that a Second Filtration still further improves the quality of Drinking Water. After being in use for a considerable period, Filters lose their power and require renovation. I have found that the passage of a little Hot Water through the Silicated Carbon Filter, and afterwards blowing a little air through it, restores its power."

J. ALFRED WANKLYN, M.R.C.S., London,
Formerly Professor of Chemistry in the London Institution;
Joint Author of a Book on Water Analysis, and of the Ammonia Process.

WARREN'S "SWEET" ESSENCE OF RENNET.

From "THE LANCET," May 13th, 1871.

"This preparation differs from the ordinary liquid and so-called essences in its freedom from acid and salt, which after a time affect injuriously the coagulating power of the rennet. Tested with milk, we found it to answer admirably."

From "THE MEDICAL PRESS AND CIRCULAR," July 12th, 1871.

"RENNET IN GASTRITIS.—Having had occasion recently to order rennet whey in the case of a child recovering from gastritis, we took the opportunity of testing, side by side with other similar preparations, Warren's Sweet Essence of Rennet. The observation of its action on milk has satisfied us that it is, of the preparations with which we are acquainted, not only the pleasantest, but the most effective, agent for the coagulation of the caseine. It acts, even under unfavourable circumstances of temperature, rapidly and certainly—a quality not enjoyed by all other solutions of the sort, and seldom possessed by the rennet bag itself."

1s. Bottles packed in one dozen cases, 9s. each, wholesale. Show Cards and Circulars supplied. Discount allowed according to Quantity taken. Orders supplied by most of the Leading Houses.

VICHY WATER COMPANY,

27, MARGARET STREET, REGENT STREET,
LONDON.

General Depot for all Mineral Waters.

A REAL SUMMER DELICACY.

ROSE AND CO.'S LIME JUICE BEVERAGES, prepared from the West India lime fruit. Delicious, cooling, and refreshing. Recommended by the *Lancet*, &c., as eminently wholesome and highly medicinal. Prepared Lime Juice, Cordial, Syrup, and Champagne. Sold everywhere.

L. ROSE & CO., Sole Manufacturers and Patentees. Wholesale Stores, Bishopsgate-avenue, Camomile-street, and at the Refinery, Leith.

EXPORT TRADE.—Messrs. Rose and Co. beg to intimate that the above Beverages are specially prepared by them for export to India, China, North and South America, &c., and the extraordinary success attending such shipments enables them to place all Export Orders on the most favourable terms from their London Establishment, 16, Bishopsgate-avenue, Camomile-street, or from their Refinery at Leith.

ADVERTISERS requiring extra space in the Educational Number of the "CHEMIST AND DRUGGIST," published on September 14th, should communicate with the Publisher at once.

THE BRITISH PHARMACEUTICAL CONFERENCE, BRIGHTON.

WHO ever originated anything is as great a mystery as the origin of the words Valerian and Taraxacum. We have taken pains to learn, but have by no means been successful in discovering how precisely the British Conference arose. The Wise Men came from the East (some read from it), but our suspicions respecting the commencement of our annual gathering point to that section of the heavens where the Northern Lights are visible. Nature has not been lavish of her charms towards our smoke-begrimed capitals of commerce, but she has made abundant recompense otherwise. One centre of manufacturing industry is intimately associated with culture and refinement. There

science, like the bridge, is decidedly on a high level. Intelligence also has its habitat where cloth is much esteemed. It appears, then, as far as we can gather, that two fellow-workers and companions thought that pharmacy might have a British Association of its own. Pharmacists should move about, interchange ideas, defossilize, gain and communicate scientific truth,—specially they should devote attention to original research. The field was entirely open, and the result is known to every reader of this Journal. So it happened that a meeting was held in what has been graphically described as “a dark and dirty room” in the town of Newcastle-on-Tyne. “It was dark, and it was dirty, and it smelled of gas.” Accepting this playful reminiscence in the spirit in which it was intended, we infer that a small beginning characterized an undertaking which has of late assumed importance, and become a powerful organization.

As its first President, the new society had the singular good fortune to secure one whose name is a synonym for respect and love. It was felt, moreover, that he was entitled to consideration, living as he did in complete isolation; for a judicious railway management had placed him on the confines of a junction which proved a bourne to which no traveller arrived. When the revered hermit emerged from his seclusion he met with a cordiality of welcome which possibly surprised himself, though no one else. Dating from this period, it is no mere panegyric to state that the Conference has steadily advanced in numbers and in usefulness. This renders its future prosperity all the more difficult to maintain, as it needs the heartiest co-operation and unremitting zeal to conserve the high position it has won.

This fact, at least, has been demonstrated, that pharmacy need not wander from its immediate circle in quest of representative leaders; they have never been wanting yet; and at Brighton we are under such happy circumstances that the point is not one under discussion. The Linnean claims our President as a son, nor does he forget to write home, well and wisely, though too seldom. We have before us a very long letter of his, on the Genus Polymorphina; there are others of earlier date. His microscopic researches are fresh in our recollection, and we feel a satisfaction in knowing that the best practical paper connected with pharmacy he has ever penned was an elucidation of the “Materia Medica of the Paris Codex,” communicated to these pages.

But we fear lest even the expressed commendation of a journal might be distasteful, and we forbear. May every fair wind fill the sails of the little Conference barque; it boasts of more rowers this year than ever; for its success we entertain no apprehension, for the helm is in very safe custody indeed.

PARLIAMENTARY.

LAST Saturday the labours of the British Parliament for 1872 were concluded. The storms of the session just passed have had but little interest for the outside world, and possibly the British public has never before shown so much apathy in the proceedings of its legislators as during the past six months. The stirring events of the Franco-German war, and the attractive scandal of the Tichborne case, surfeited newspaper readers for a season, and those journals were most welcome which condensed their Parliamentary reports the most. For several months the “Ballot Bill” was a constantly recurring bugbear as the morning *répertoire* was opened, and daily it aroused an inward groan. The world has a dim sort of notion that the Bill was passed, and is now law. It is regarded and submitted

to, like the weather and taxes, as an event beyond our control, and which we must therefore bear with the best grace possible. The Budget was simple and unpretentious, but its provisions for relieving the small middle-class people from their exceptionally severe share of the direct taxation of the country relieved it from mediocrity, and indicated the honest desire, with which we have always credited Mr. Lowe, to adjust the taxes fairly. The great feature of the session was undoubtedly the temporary stoppage of the arbitration treaty between England and America, a difficulty overcome mainly through the genuine respect which the two great Anglo-Saxon nations entertain for each other, but the surmounting of which was attributable in no small degree to the patience and excellent temper in which Lord Granville and Mr. Gladstone met it. It is not likely that the Geneva Conference will inaugurate the millenium of peace; but that Conference does show plainly to the world that a not unimportant section of the human race has laid aside bloodthirstiness, and is hoping for a time when it can not only sheathe but cast away its sword.

We are not competent to discuss the Army Bill, but there are a few minor Acts which may prove valuable. The Public Health Act is confessedly imperfect, and smart critics doubt whether it was worth while to pass such a mutilated bill at all. In simple fact it does little more than establish a central authority, and arrange for radiation in order to get the present sanitary laws of the country fairly enforced. “The policy of sewage” will never be attractive; but there are some earnest men who make it the business of their lives, and we cannot regret to see them obtain the aid of a little Government despotism. Suicide is nominally illegal; but those who wish to indulge in it, can do so without much difficulty with the assistance of steel or strychnine. But we must draw the line somewhere; and when it is found that thousands are slain annually, and that tens of thousands live in danger and discomfort because of certain vested rights in dirt and its accompaniments, it seems time to introduce some mild form of tyranny to overthrow these vested rights. Mr. Muntz’s Adulteration of Food and Drugs’ Bill is one of those pieces of amateur legislation which are occasionally permitted to cumber the statute book, but which work no real good, and which, after annoying some half-dozen individuals, who may or may not have offended, perish and are forgotten. The Council of the Pharmaceutical Society deserves the credit of having met a threatened danger in this Bill with promptitude and with success. The clause in the Licensing Bill requiring grocers to apply to the magistrates for a licence to deal in wines and spirits in the same manner as publicans will affect those of our readers who deal in those luxuries. The Petroloum Bill, the main object of which was to alter the test, was passed through the House of Lords and read twice in the Commons, but was finally withdrawn.

Her Majesty’s ministers have this year avoided any collision with the chemists and druggists of the kingdom, and we have also reason to be grateful to the Attorney-General for his ready recognition of the claims of pharmacists to be exempt from jury service. His measure was too radical to expect to get it through Parliament in a single session, and we may be well content to wait. The endorsement of the justice of our request by a lawyer so distinguished as Sir John Coleridge relieves us from the labour of repeating any arguments in support of the same, and will carry more weight than could attach to an *ex parte* statement.

Possibly we take a more optimistic view of the results of the session than do most of our contemporaries, but inasmuch as we did not expect last February the realization of all our desires by August, we are less inclined to be hypercritical.

We shall never join in the supercilious sneers which certain journals cast on Mr. Gladstone with a lofty tone of superiority, because we recognize in him a man who has served his country both brilliantly and honestly, and who has aimed with all his soul to substitute statesmanship for statecraft in every relation of government.

We have one suggestion to make in anticipation of next session, which is in regard to the scandal of Civil Service co-operative stores which is still persisted in. The managers have not been unaffected by the movement that has been made already against them, and we are confident that if the tradesmen of England, whose affair it is, would combine determinedly, they could stop a system which on a small scale would not be tolerated for a week, and which exists only because of the want of earnest effort to suppress it. Let us not mix up the case with any abstract consideration about co-operation, nor allow sneers at our shop-keeping narrow-mindedness to deter us. Let us take our stand on the fair basis that public servants shall attend simply to public business, or leave it alone altogether, and if there is no law whereby this can be enforced, let us demand one. If the National Chamber of Trade will announce its resolve to make an earnest contest on this one point, let us take that as a nucleus and support it heartily, and let all the trade journals aid the battle with their advocacy. Mr. Lowe stated lately that "Civil servants were absolutely prohibited from engaging in mercantile pursuits, *if those pursuits took up any portion of the time which they owed to the public.*" We are in a position to assert that some, if not all the directors of these stores have thus spent time which they owe to the public. Let the trading classes of England prepare for next session, and the Government will not deny them that respectful attention which is their due.

PROFESSOR ATTFIELD ON EDUCATION.

PROFESSOR ATTFIELD waxes warm as he condemns in vigorous sentences all the surroundings of "that hideous usurper—ORAM." "Can it be characterized by too vile a name?" he asks. Most decidedly it can, and Dr. Attfield's violent abuse of any but the most strictly legitimate system of pharmaceutical education is a perfect answer to his own question.

Everyone will read the report of the lecture, which we publish in this number, with enjoyment. It seems to have been written expressly for the "holiday number" of the *Chemist and Druggist*, and the reader must needs enter in some degree into the gaiety which seems to suffuse the author's mind as he revels in the emancipation from all kinds of logical encumbrance which he has accomplished for the summer months. Hard knocks and the most cheerful sort of kicks follow each other in rapid succession, apparently aimed at everybody within reach. Examiners, students, tutors, the Pharmacy Act, and even the College of Pharmacy itself, all get the Professor's blows in turn, if not straight in the face, at least by reflex action. And what is it all about? Why, simply because an Act of Parliament has not created 20,000 first-rate pharmacists in five years. The fact is, there is some danger that a few of our leading men will run wild over this education question. If they establish a school of pharmacy in every street of Great Britain, they will never raise us all to their own high intellectual level. We are not opponents of culture; we merely write against extravagant notions and illogical conclusions. Say that, in this United Kingdom, there are 20,000 persons interested in pharmacy. Of those 20,000 there are perhaps 100 who may be called "eminent." Are the

19,900 to be branded as criminals because they are not equally "eminent?" The eminent ones, by their superior influence and energy, have got an Act passed, which compels everyone who will become a pharmacist to get somehow or another so much special knowledge as will pass him through a certain examination. Some choose to get their knowledge in the readiest attainable method, and their process is arbitrarily described as "cramming"—a word which signifies nothing in the world but the conveyance of instruction, but which, according to Dr. Attfield, is synonymous with felony, burglary, and everything that is vile. This is how the author arrives at such a conclusion, or rather, it is one of his methods, and it is a rich specimen of the disregard of logic which pervades his paper. A certain person, "described as a teacher," but who was more correctly a crammer, was committed for trial, eighteen months ago, for having stolen some examination papers. He was a thief. *Ergo*—"a crammer is a thief." Dr. Attfield does not attempt to prove that every "crammer," or tutor, as some people would call him, steals examination papers. The person in question got them from the printer before the examination came on. No other tutor has yet been convicted of ever attempting this. But the author gaily overleaps this little chasm in the chain of evidence; and, lumping them altogether, tacitly picks this one out as a specimen, and reaches the goal of his argument in three steps—*teacher, CRAMMER, THIEF.*

Now, we come to "the insidious and wicked process" adopted by these crammers. Their system is described as definitely as a chemical equation would be by the same pen:—

"A promise is exacted from every candidate that after passing the examination he shall return to his crammer and reproduce the questions he has been asked. Those brought by first pupils are carefully written down; and thus, in a short time, the crammer has a list of the questions commonly asked by each examiner; the lists are revised from time to time by the aid of subsequent candidates. On the entry of a pupil, a list of questions and answers in each subject is placed before him with the general instruction that the first half of each set is to be learned by heart, and the second to be acquired if possible. And so, one week is given to what is called "chemistry," one to "botany," one to "materia medica," and one spent over the "Pharmacopœia;" and any young man who has previously been in a druggist's shop is thus successfully prepared for the Minor. Nay, even if he has never before seen a prescription, an extra fortnight or so at "practical dispensing" enables him to satisfy the examiners. The successful legitimate candidate knows his subjects; the successful illegitimate candidate knows the questions that will be put to him."

If this be the exact state of the case, it reflects the greatest discredit on the examiners, who ought not to be, and we venture to add, *are not* the men to be so easily imposed upon. We take upon ourselves to defend the examiners. We can explain this marvellous mystery in two sentences, and in doing so we only repeat a "thrice-told tale." The young men who come from the "crammers" were not absolute ignoramuses a month previously. They have served their apprenticeships, and perhaps for years have studied away at the sciences which go to make up pharmacy. The "crammer," so to speak, puts them through a course of training specially adapted to the examinations which are before them, but he could no more make an ignoramus pass than could a river-coach make an Oxford crew out of eight City clerks in the same space of time.

It would be marvellously absurd to pretend that this kind of education is at all equal to the systematic training which is to be had in a large laboratory, and under the tutorship of distinguished professors; but it is almost, if not quite, as monstrous to assert that the Act has yielded no such thing as compulsory education. A time may come when a still higher standard can be fixed, and when a course of study may be insisted upon; but assertions palpably extravagant will not hasten that time.

The burden of Dr. Attfield's complaint is really that all these young men are not particularly anxious to learn a great deal more than is demanded of them. This may be a

fit subject for complaint, but it does not lay them open justly to such charges of knavery as the paper before us undoubtedly insinuates. As we read the stirring declamations of our educators from time to time, we are half led to think for the moment that it is an essential part of man's moral duty to discover a new plant, or to associate his name with some piece of chemical research. These occupations will always be the work of the few—at least, we hope so. As reasonably might one declaim against us because we do not all follow the example of Palmieri, and live on the side of a volcano during its eruption, or of Livingstone, and go and search for the sources of the Nile. True science is diametrically opposed to priestcraft; but it is the essence of priestcraft to make a crime where none existed before, or to establish a new commandment without authority. "Thou shalt undertake original investigation" would be the logical result of such advocacy as that before us, and it is not desirable to add such a precept to our code.

There are some first-rate points in Dr. Attfield's paper which we leave to speak for themselves. It is sparkling and forcible throughout. But the tendency towards a Donnybrook-fair style of literature, charming as it is to a healthy mind, will assuredly bring out other shillelaghs besides our own.

THE CONSERVATION OF EFFORT.

By JOSEPH INCE.

FARADAY, fifteen years ago, gave a lecture at the Royal Institution called "The Conservation of Force." In writing on educational subjects, one thought has harassed and perplexed my mind—a difficulty which I could neither solve nor explain away, hung like a cloud over many a pleasant picture—one terrible shortcoming marred my best theories and those of others. Most of us have quietly let it drop as an uncomfortable, unaccountable thing—but this must not be. I ask my brethren in pharmacy for their patient and severe attention while they enter the regions of the abstract which is simply the essence of the practical, and read sentences that may weary and prove unattractive, but the issues of which for good and evil are overwhelming: when explained, however feebly, they are golden in their hopes, while they apply equally to science as to trade, to business or to study; in fact, to every possible form of effort. Nor let it displease any that our speculations are derived mainly from the Phædon, and our realities have been suggested by that discourse, which, fifteen years ago, before the late Prince Consort and a brilliant audience, the great philosopher pronounced.

Our personal and immediate difficulty is this:—We bid the student to improve—to persevere and conquer obstacles. To this end we give him lectures; write books, advise, preach, and teach. We praise and blame, threaten and encourage, and place before his eyes with every twist of the kaleidoscope his ultimate, sure reward. Under such influences he begins to strive; then he finds that the night of toil is slow to break; when light dawns it emits the most watery rays; it is not the sun shining in its strength, for which he had so fondly hoped, and which he had so frequently been promised. Turning to the prosaic present—his annual thirty pounds, long work and hours—he is disappointed. The seemingly delayed reward of effort is the crucial stumbling-block which frowns upon our theories like the Great Orme's Head in the middle of the sea. Instinctively, naturally, inevitably, he despairs; then becomes apathetic; and, finally, he drifts with the drift into common-place: that is the world in which we live and move

and have our being. Secondly, and with far more sinister issue, he compares himself with others—with stronger men, and with the more successful. They do with ease what he achieves with labour; their night of toil is quickly past; their sun dazzles with its light. What shall we say then? how offer consolation? Simply by going back to first great principles. No force perishes; once put forth, it exerts its influence for ever. From the most trembling spark of true endeavour date consequences which never end; success does not imply its recognition. Something has been gained; it is then existent; it is there; and never more truly there than when proclaimed by the general public from the house-tops. When Blondin stretched his rope across the river and practised for seven years, the first step, after which he tumbled into the stream, was one which went into the aggregate of those by which afterwards he crossed Niagara in triumph; from which we learn this doctrine—let it be graven on our hearts—No man is failing who is going on. Failure is relinquished effort—stoppage; abandonment.

There is a motto which has adorned countless essays, and pointed the moral of a thousand exhortations,

Gutta cavat lapidem non vi sed sæpe cadendo.

This chronicles the drop's victory over inert matter—beyond that it is inaccurate and faulty. The drop does wear away the stone by force, and by that force repeated, and by the latter because that force has been conserved. The force of the second drop was its own plus the one preceding. The exact power of the accumulation would be expressed mathematically, at first by the square root; but we have no right to assume this for the higher powers, certainly not for intellectual calculation. Four plus four may be sixteen, but we have no shadow of right to predicate what may be the exact power of the sixteenth effort of a man relative to his seventeenth. I believe, as we approach the higher powers, it is infinitely in advance of mathematical ratio, and moreover, that God has granted unto certain, power of accumulation and conservation that set our theories at defiance. Be this so or not, the fact remains; good attained renders increase of good easier of attainment; bad attained renders increase of bad more perilously attainable. In this sense, while the axiom is true, *facilis decensus Averni*, so also easy is the ascent to Heaven. Neither is possible without one commencing effort, to be followed and multiplied by a second.

But with respect to the sermon in the stone—the last drops, which caused its disappearance was the force of that one drop added to, or multiplied by, the force of every single drop that had gone before. Therefore, weary labourer, in whatever cause, mark this well—have a stout heart—no force perishes—you may seem long in building the foundation, but the glorious edifice will rise, must rise eventually, and the temple in all its fair proportions crown the builder's hope.

Will you kindly think over with me the beautiful illustration of Plato? He states—and no one can contest the notion—that a mirror never loses an image once cast upon it; there it remains throughout the ages, and is never effaced by the presence of myriads of successive images;—a thought as beautiful as it is dreadful, and as hopeful. Therefore, our least acquirement never dies—no bankruptcy ever waits on effort; our strivings form a stronghold where neither moth nor rust corrupt, and where thieves do not break in and steal. It may further be true what Plato adds, that all knowledge may be the power of recollection. Join this to the conservation of effort, and may we not then explain by this the wonderful examples of great men—statesmen, poets, generals, thinkers, students, artists (various) and writers? May it not be said that the trained memory of such

has intensified capability of recollection, and the results that otherwise astound us are proofs of natural sequence? There is no man so unobservant, so frivolous, or so material, as not sometimes in his career to have stopped blank and said, *Why* am I doing this? There are actions and impressions, influences external and internal, resulting in lines of conduct which he can neither explain nor fathom. Our life is a mystery apart from the doctrine of conservation. The way we think or act, or read a book or learn, is otherwise beyond comprehension. Thus when a mother reads the Bible to her child; tells him its old-world stories, recites its poetry, or repeats the solemn sentences of the prophecies, she is awakening within him an intellectual life which, like his own, will be immortal. Further, we have no conceivable idea of the influence we exert on each surrounding individual, still less of their reciprocal influence; and we may be driven either into vanity or despair. Best for us, if we bow in unfeigned humility before the All-wise, when we reflect on the immensity of power stored up within us, and of the poverty and beggarliness of the return. Suppose we endeavour to work out theoretical speculation into the useful and the practical.

Learn then, first, never to be discouraged with scanty progress—call it deferred success. Plant the acorn in the earth, and never trouble that the majestic oak is not the production of an hour.

Secondly, omit the word *failure* from your vocabulary—the term is not wanted in the English language, nor its translation in any other.

Thirdly, adopt an intelligent, estimate of superiority in others.

Lastly, be joyful through hope. All shall yield to continuous effort unless the conservation of its force turns out a fable. *Fortes creantur fortibus*—strength comes from the strong.

The priest of science, like the priest of God, is not ignorant that they also serve who only stand and wait. Not for him, the acolyte, is it to penetrate the hidden mysteries of his art; “but patience—there will come a time” when the obscure shall brighten into light, and things secret shall be revealed. Advancing, he shall gain more knowledge and more power; whether they become the world’s property, or remain his own. Strange sacred fires shall burn upon his altar, and celestial music transform his cold service into gladness. This is but to express in figurative language how advance is made. Effort is vital; it creates power. The conservation of effort teaches that power increases by possession. We know to a certainty the fact of the increase, not its actual amount, nor the ratio of its progression. We cannot appreciate the value of the acquired starting point of progression.

I once used to say that superior, transcendent, added, powers were *gifts*; and I never saw the smallest reason for relinquishing this view. It is written, “to him that hath shall”—not be developed—“but be given.” Nor can I explain to my own mind why either the Creator should not reward with *gifts*, any more than that He could not produce His own earth in six days, six periods of time, or six seconds. But I acknowledge that the conservation of effort, the growth of power—graduated and definite—is a better, and perhaps a clearer theory, notwithstanding that the graduation cannot be marked off by any philosophical instrument we have.

Accept it therefore—its consolation has no limit, neither has its inspiration towards the good. It will transfigure you and me in all our undertakings, if we believe and act out its precepts. Both theories will lead us right; take us out of our narrow circles, and induce us to breathe an ampler ether, which we shall find assuredly a diviner air.



CHEMICAL TECHNOLOGY.*

PERHAPS the laws which influence chemical literature are quite independent of the principles which control supply and demand; or it may be—and it does not appear unlikely—that the literature of this branch of science disdains that which is the very essence of the science itself, and struggles for existence independently of law. However this may be, it does appear strange that in this country which owes its almost unrivalled position to arts and manufactures nurtured by science, technological chemistry has been so poorly represented in English scientific literature. It cannot be doubted for a moment that the necessity for the introduction of thoroughly scientific methods into our arts and manufactures is as old as themselves; but it is only the progress of knowledge that makes this necessity felt. The scientific investigator as he extends his knowledge of nature, experiences a proportionate increase in his sense of ignorance. He finds defects where they were least sought for, and ever sees the perfection which he aims at beyond him. But the applier of science generally occupies a very different position, and is comparatively satisfied while processes supposed to be scientific are carried out with a lavish expenditure of Nature’s gifts—a most unnecessary loss of time, labour, and capital. He looks back on the clumsy methods of his forefathers, and contrasting them with his modern applications, smiles at the ignorance of the past generation, forgetting that his turn to occupy an equally unenviable position has yet to come. Thus it is that while on the one hand the necessity for scientific education is recognised, on the other hand it is not sufficiently appreciated to make the demand for it a genuine reality. However a change for the better is undoubtedly taking place. The appearance of the volume before us is but one of many indications of this fact. Being fully persuaded that the study of applied chemistry has become absolutely necessary for the welfare of most, if not all, of our national industries, we are not a little gratified to find the work of an eminent German Professor of Chemical Technology made available for this purpose. Dr. Wagner’s book, or rather his books, have been before the German public since 1850, new editions having appeared at intervals of about three years. The volume before us is a translation of the eighth German edition, with the addition—Mr. Crookes states—of such improvement in technological processes as have appeared since its publication. The work consists of eight principal divisions. The first division is devoted to metallurgy. After some introductory observations on the preparation and smelting of ores in general, iron occupies attention. The numerous operations to which this metal, in its various modifications and combinations, is subjected, are described and explained, from the treatment of its ores, to the application of steel, and the preparation of such substances as green vitriol, the cyanogen compounds, etc. In a similar manner the useful and noble metals, and those which yield compounds of importance are treated. The second division concerns “Crude Materials and Products of Chemical Industry,” embracing the very important compounds of the alkali metals, the commercially important metalloids, the technology of explosive compounds, of soap, etc. The third division is devoted to the “Technology of Glass, Ceramic Ware, Gypsum, Lime, and Mortar.” “Vegetable Fibres and their Technical Applications,” and animal substances and their industrial application are respectively the subjects of Divisions IV. and V. The former includes flax, hemp, cotton, paper, starch, sugar, wine, beer, spirits, bread, vinegar, tobacco, essential oil, etc. The latter includes wool, silk, tanning, glue-boiling, phosphorus and its manufacture, matches, animal charcoal, milk, and meat. The sixth division treats of “Dyeing and Calico Printing;” the seventh “The Materials and Apparatus for Producing Artificial Light;” and the last division is

* Wagner’s “Chemical Technology.” Edited by WILLIAM CROOKES, F.R.S. London: Churchill.

devoted to "Fuel and Heating Apparatus." This is about the most condensed account we could give of the contents of the book, but it will suffice to show roughly the very wide field which it covers. It is copiously illustrated, but several of the wood-cuts are not creditable to the printer, being very indistinct. It would be unreasonable to turn to a work of this sort for minute details, either of the theory or practice of the numerous operations described; though, indeed, in many cases the details given are rather more elaborate than is consistent with the extent of the work. This, however, we could scarcely find fault with were it not for the fact that there are corresponding omissions, some important improvements in chemical technology not having been noticed. Towards the close of last year a new era appeared to have dawned upon the iron manufacture, when Mr. Danks informed the Iron and Steel Institute that he had surmounted the difficulties which had appeared to necessitate the application of manual labour alone to the very important puddling process; and showed practically that there was nothing to prevent the operation from being more satisfactorily conducted by mechanical means. This invention has brought to light some entirely new chemical facts. It has shown, for example, that the value of pig iron for puddling may be directly proportional to the quantities of silicium and phosphorus present, whereas the reverse was formerly supposed to be true. In the volume before us the operation is described as manual, and there is no allusion to Mr. Danks' invention. The preparation of chlorine receives a good deal of attention, but we were disappointed to find that Deacon's process is not mentioned. As an application of a curious chemical fact, it deserves notice at least on account of its scientific interest. However, we may be disposed to regard such omissions, we cannot find fault with what the work contains. We have seldom seen such an amount of valuable information condensed within the pages of a single volume. Even the domestic economist, who is perhaps the least likely to seek instruction in a work on chemical technology, may learn the science of the preservation of milk, the making of butter, or of Liebig's broth; or if information is sought concerning the all-important subject of the economy of fuel, there is something about "Chimney Heating," which is worth consideration. On this subject we read—"The mode of heating in general use in England and the larger towns of Scotland, Ireland, and Wales, is of ancient use, and is based upon the heating of the air of the rooms by the direct radiation of the heat of the fire. It is undoubtedly the most imperfect and wasteful method, as there flows into the chimney a large excess of air above that required for maintaining the combustion of the fuel, the consequence being that strong draughts of cold air are felt near the windows and doors of the rooms, while a downward current of air is frequently created, causing the chimney to smoke. This mode of heating only suits countries enjoying an average mild climate and possessed of plenty of fuel." It is satisfactory to find that there is some method in our madness—the text continues—"It would appear that among the reasons why this mode of heating is continued is the pleasure of seeing the fire and of warming the feet by it, notwithstanding that the other parts of the body remain comparatively cool." Our use of coal for the production of steam is a little more scientific, but the fact remains that our best appliances enable us to utilize only a fraction of the mechanical equivalent of the heat produced.

It is difficult to form a conception of the extent of the field that lies open before us for the exercise and industrial application of chemical knowledge. It must increase as the science progresses. Every advance in scientific knowledge should be an increase in power. To this end we look to the introduction of such subjects as form the substance of this volume, into the educational programme of our industrial classes; and we hope soon to find their importance recognised in our universities, and to see them receiving some share of that attention still so largely devoted to the study of long since unspoken languages, and the fossil literature of extinct races.

While thanking Mr. Crookes for having made Wagner's valuable work available for the English reader, we hope to see subsequent editions free from such defects as we have referred to.

FRENCH MINERAL WATERS.*

If anyone wants to get a tolerably complete account of the mineral baths and mineral waters of France, he will find it in this book; but he will be required to take at the same time another two hundred pages of tedious gossip of the smallest possible interest or value, badly translated, and relieved only by the pretty style in which the publishers have turned out the volume. Monsieur Donné is evidently one of those well-meaning authors who try to combine instruction with amusement. This brimstone-and-treacle style is seldom successful, and when lessons on medical hygiene constitute the particular kind of instruction which is to be conveyed, the chances of failure are still further augmented. We can find very little usefulness in Dr. Donné's various hints on hygiene, which seem generally correct enough, but rather stale; nor can we manage to interest ourselves in his excursions and little adventures among the Pyrenees, Corsica, Switzerland, etc. But the hundred pages or so which describe the character of the various springs and baths of France, which are supposed so considerably to aid the medical art, have undoubtedly a certain degree of interest. Monsieur Donné has considerable faith in these mineral waters. He does not believe their virtues can be artificially reproduced by following chemical analysis. He quotes Chaptal, who says that "chemists analyze the corpse only of mineral waters," and he argues that imagination and variety of interest cannot produce all the benefit which is often manifest in patients' health from visiting these resorts, from the fact that "animals, broken-winded horses," for example, "are every year taken to Eaux Bonnes, Canterets, Bagnères de Luchon, and these no less than man, and probably without the influence of imagination, experience the salutary influence of the waters." The fact that these waters sometimes act injuriously is also rightly brought forward as a powerful argument that in other cases their effect may be beneficial. Monsieur Donné instances in this regard the waters of Loèche in Switzerland, which, while they yield to analysis only a few saline matters, very frequently induce a formidable eruption, which is described as "a kind of suppuration of the whole surface of the body." Another instance nearer home recurs to our memory. A stone in one of the Cheltenham graveyards bears this record:—

Here lies I and my two daughters,
Killed by drinking Cheltenham waters;
If we had stuck to Epsom salts,
We shouldn't have been lying in these here vaults.

Leaving this question, however, we may quote a specimen from the description of the springs, and for general usefulness we select the account of the Vichy:—

Vichy.—Vichy is so well known that I shall say but little concerning it. Vichy transformed is the queen of thermal residences.

What a singular country is this, where you cannot make a hole in the ground, dig a well, without obtaining alkaline water, with the flavour of lye, and possessing certain well-known properties! It is but a short time the difficulty at Vichy was not to discover mineral water, but, on the contrary, to procure fresh water, common water, and this over an extent of several leagues.

It would be an interesting subject to study the diseases prevailing in the valley of Vichy, to discover whether the alkaline nature of the waters permeating the soil, and which must be met with in some degree in most of the springs and wells used by the inhabitants, has any influence on the nature of the disorders—whether morbid dispositions are modified thereby. Are there more or less persons suffering from gravel, stone, or gout than elsewhere?

The thermal establishment is magnificent, and, in spite of its gigantic proportions, scarcely suffices for the immense number of invalids frequenting the place. Not only are these springs beneficial in a host of disorders, in varied and widely-spread affections, but they in a manner are unique in the world, and people come hither from all parts of Europe. Moreover, the visitors of Vichy belong to the higher classes of society: for enlargement of the liver and intestines, gravel, stone, and gout are frequently the consequence of an idle life, a comfortable regimen, and succulent dishes.

Are the Vichy waters favourable to the treatment of gout? Prunelle said, "No;" Ch. Petit said, "Yes:" the one warned the gouty away, the other invited them. This was puzzling. As for me, all that I can say is that alkaline waters are evidently calculated to combat one of the ordinary effects of gout—the presence of uric acid in excess in urine—that by analogy we may suppose them to have the property of dissolving enlargements of the joints, equally produced by uric acid; but these are only effects or results of gout; and as to gout itself, its nature and cause, we can say nothing; experience alone can decide.

Is Vichy water able to dissolve gravel and stone? It is less the substance of the stone itself which is attacked by alkaline waters than the

* "Change of Air and Scene." By ALPHONSE DONNÉ, M.D., Rector of the Academy of Montpellier. London: Henry S. King and Co.

organic matter, the condensed mucus which unites and cements the stony particles. But this is the essential point, for the object is to disintegrate the stones that are formed. It thence follows that the water of Vichy acts equally well on all kinds of stone, whatever their composition be; the cement is always the same. Yet I would not rely on it in all cases, for I have seen stones so rapidly formed by means of the alkaline salts which certain individuals produce, that I would not venture to promote this secretion by giving them Vichy water to drink. Ah! if Vichy water prevented the formation of the mucous matter which tends in such persons to combine the saline substances existing in every organism, but which do not agglomerate in the normal state, this would be an invaluable property; the stone would thus be attacked in its origin and chief cause. But at present we know neither the circumstances which modify the mucus and impart to it glutinous properties, nor the means to prevent this modification. In a word, we do not know why the saline matters in urine do not combine in some persons, even when existing in excess, and why, on the contrary, they combine in others. We consequently are ignorant of the means of resisting the production of the organic matter which forms the cement of stone and gravel.

After this digression let us say farewell to the splendid sources of Vichy, but let us stop another moment at the spring of the Great Grille and before that of the hospital, and contemplate for a while the effervescence produced by the countless bubbles of carbonic acid gas which stir up the water, and then let us start for Nérès.

There are descriptions of some other baths more entertaining than the one we have just quoted, but for them we must refer to the book itself.

ON THE ADULTERATION OF ESSENTIAL OILS WITH ALCOHOL, CHLOROFORM, AND THE CHEAP OILS OF PINES.

[Hager—Translated for the CHEMIST AND DRUGGIST.]

THE adulterations of essential oils with alcohol are not unfrequent, and especially is it practised with the more costly oils. The best method to detect these adulterations is the following:—Five to ten drops of the oil are put in a test tube together with a piece of tannic acid of the size of a pea, and moistened on all sides by gently shaking the tube. Usually tannic acid is insoluble in essential oils and floats, if they are unadulterated, for whole days at the surface without being changed in the least degree. If the oil contains alcohol, then the tannic acid attracts the latter, according to the quantity, within three to forty-eight hours, and forms a more or less pellucid, sticky, tough or soft mass, which sinks to the bottom and sticks firmly to the sides of the tube, so that it is not moved when the latter is agitated. The consistence may be examined by means of a knitting-pin. If the oil contains traces of moisture this does not impair the value of the test, only a few oils (e.g., ol. sinapis) show then a different behaviour. The tannic acid settles in this case in the form of a hyaline mass, but when examined with the knitting-pin it proves not tough or soft but hard, and it can even be divided in small pieces. With ol. amygd., ol. cassiæ, and some sorts of ol. caryoph. the tannin test is not admissible, for in their pure state they dissolve tannic acid; and if adulterated with alcohol, even in considerable quantities. Still the test can be applied to these oils, when they are mixed with twice their volume of rectified oil of turpentine; but in this case they must stand for about two days. If the essential oils contain large quantities of alcohol, the tannic acid becomes entirely dissolved. A second method is the sodium test, founded upon the fact that those oils which are hydro-carburets present no changes or reactions on the addition of sodium; and those containing oxygen, besides carburetted hydrogen, give with sodium a very moderate evolution of hydrogen gas, and show in the first ten or five minutes of the reaction little change, while those adulterated with alcohol show a violent and rapid evolution of hydrogen, and very soon become brown or dark brown, semi-fluid or solid. Ten drops of oil and a small piece of metallic sodium are placed in a test tube for the experiment. This method is less effective than the tannin test, an adulteration of 3 to 5 per cent. cannot be proved by it with certainty. A reaction of sodium does not take place, or is very little perceptible with the following pure oils:—Balsami copaibæ, bergamot, ceræ, citri, lavender, menth. crisp., menth. pip., nuc. mosch., petit-grain, piperis, rosemary, sativæ, succini, terebinth. To these oils the sodium test is undoubtedly applicable.

Adulteration with Chloroform.—The latter is not always recognisable by taste or smell, especially when present to a small amount only; in all cases it will considerably increase the specific gravity of the oil. The best method to detect it is the following:—

Fifteen drops of the oil, 45 to 90 of rectified spirit,

30 to 40 drops diluted sulphuric acid, are placed in a test tube together, with two or three scraps of zinc, heated till a rapid evolution of hydrogen takes place. After shaking it well, put aside and heat again, when the evolution of hydrogen begins to lessen. This heating and gently shaking of the liquid is repeated several times. After the lapse of twenty or twenty-five minutes, an equal volume of cold distilled water is added, the liquid well shaken, and then filtered through filtering paper, previously moistened. The filtered liquor is made strongly acid by the addition of nitric acid, and then tested with solution of nitrate of silver. If chloroform was present a turbidity or precipitate of chloride of silver appears. When ol. amygd. amar. is the subject of the examination, the precipitate is to be tested for cyanide of silver. This is effected by pouring on 25 drops of distilled water, and 40 drops of pure concentrated sulphuric acid. When gently boiled cyanide of silver becomes dissolved, but not chloride of silver.

Adulteration with the Essential Oils of Pines or other cheap Essential Oils.—If the nose fails to detect these adulterations, the following tests have to be applied.

1. Solubility in rectified spirit at middle temperature (15 to 20° C.) Five drops of the oil are placed in a test tube, and added to it the same, double, or larger quantity of rectified spirit; after gently shaking clear solution should result.

One volume of essential oil requires for solution rectified spirit—

	Vol.		Vol.
Oleum Absinthii . . .	1	Oleum *Juniperi . . .	10
„ Amygd. am. . .	1	„ Lavandulæ . . .	1
„ Animale æth. . .	1	„ Macis . . .	5
„ Anisi . . .	3, 5	„ Majoranæ . . .	1
„ *Aurantii dulc. . .	7	„ Menth. crisp. . .	1
„ *Bals. copaibæ . .	50	„ „ pip. . .	1
„ Bergamot . . .	1	„ Petit-grain . . .	1
„ Cajuputi . . .	1	„ Petrosolini . .	3 to 5
„ Calami . . .	1	„ *Pini silvestris . .	9
„ Carui . . .	1	„ Rosmarini . . .	2
„ Caryophyll. . .	1	„ Rutæ . . .	1
„ Chamomill . . .	7	„ Sabinæ . . .	2
„ Cinnamomi Cassiæ .	1	„ Satiæ . . .	1
„ *Cort. aurant. . .	15	„ Sinapis . . .	3
„ *Cort. citri . . .	7	„ *Succini rectific. .	15
„ *Cubebæ . . .	25	„ Tanacet. . .	1
„ Flor. aurantii . .	1 to 2	„ Terebinth. . .	9
„ Fœniculi . . .	1 to 2	„ Thymi . . .	1
„ *Hyssopi . . .	3	„ Valerianæ . . .	1

Those marked * dissolve, but not always perfectly clear.

The results obtained by this method cannot be regarded as conclusive for the presence or absence of pine oils. The less soluble oil becomes more soluble in alcohol, when mixed with an oil that is easily dissolved by rectified spirit; on the other hand, an adulteration cannot be regarded as proved, when one or the other oil gives a turbid mixture. The oil makes itself only suspicious by that, and is to be subjected to a further examination.

2. **Examination with Iodine** is founded on the fact that some oils, mainly those of the pines, detonate briskly with iodine, others develop heat and vapours, and some remain indifferent. In a watch-glass are placed 1 to 2 grains of dry iodine and 4 to 6 drops of the oil. A lively reaction (detonation) accompanied with considerable rise of temperature and evolution of vapours takes place with the following oils:—

a. Absinthii, cort. aurant, flor. aurantii, bergamot, citri, lavandulæ, macis, origani, pini, sabinæ, spicæ, terebinthinæ.

b. None of these reactions are observed with Amygd. am., animale Dippelii, asphalti, balsami copaibæ, cajuputi, calami, caryophyllor, cascarillæ, cinæ, cinnam., melissæ indic., menth. pip., petræ, petrosolini, rosarum, rutæ, sinapis, succini rectific., tanacet., valerianæ.

c. Insignificant rise of temperature and little development of vapours are exhibited by *Oleum*—Anethi, anisi, anisi stollati, arnicæ, cardamomi, chamomillæ, cubebæ, fœniculi, hyssopi, majoranæ, melissæ, menth. crisp., rosmarini, sativæ, sassafras, sorpylli, thymi.

When an oil of the second series becomes heated with iodine, it may be adulterated with a cheap oil of the first series. The same is the case when an oil of the third series shows a strong reaction, and expels vapours with considerable heat.

CURIOUS AMERICAN PATENTS.

A CORRESPONDENT of the *New York Druggists' Circular* has been hunting through the records of the American Patent Office, and has discovered some curious specimens connected with medicine and pharmacy. We copy a few:—

The patents begin 1790.

The first pills—Samuel Lee, Jr., antibilious pills, April 30, 1796.

Vegetable wash for the lungs—Geo. Rogers, Dec. 31, 1808.

Chlorine! Cosmetic—David West, Jan. 11, 1833.

To keep butter sweet.—Pack the butter in tin canisters and surround it with a thin film of 5j. *Potassi iodidii* in 3vij. water!!! Patented by Louis de Corn, Cincinnati, Aug. 3, 1852.

You have doubtless heard about the inventive genius of the Yankees, and as proof heard cited “trap for the tape-worm!” Judge of my astonishment in reading the specification of Patent No. 11,942 (Nov. 14, 1854). It is no fiction! To Dr. Alpheus Myers, Logansport, Ind.

Trap of gold, one inch long by $\frac{1}{4}$ inch diameter, a hollow tube in three pieces, having holes and other contrivances. After the patient has fasted from two to six days, the trap baited for the worm is swallowed, the end of a cord attached being returned from the mouth. The worm, in reaching the bait through a hole, is to get his head caught by teeth, when trap and worm are withdrawn together.

If the worm is not caught in twelve hours, the trap is brought up and baited anew.

The first patent recorded was for the manufacture of *potash and pearlash*. Samuel Hopkins, Vermont, July 31, 1790.

Hair restorative. Beverly Harris, N. Orls., Mch. 1, 1859. 23,086. “I claim the use of *bitter apple* and *gunpowder* (!!) in combination with *castor-oil*, *bay-rum*, *alcohol*, and *quinine*.”

Physician's cane. S. T. Trowbridge, Decatur, Ills. Jan. 3, 1860. 26,721.—“Cane hollow, closed at the bottom, having a semitube attached to the knob of the handle, said semitube forming a receptacle for vials containing medicine.”

Substitute for Glass. A wire webbing covered with a transparent coat of isinglass, acacia, oxalic acid, alcohol, and then varnished. Charles Suessegger, N. Y., July 14, 1863.

Piles. Will. Carr, Maine, May 12, 1863.

Decoct. of fir bark,
add 5 tablespoonfuls powd. hard wood charcoal,
2 teaspoonfuls powd. resin,
1 grated nutmeg.

Mix. Drink. (Query: all at once?)

Rheumatic liniment. Louisa E. Anderson, St. Louis, Nov. 17, 1863.

1 dozen eggs,
1 „ garden peppers,
1 pint mustard-seed,
1 roll brimstone,
5 ij camphor.

Enclose in a suitable vessel and roast before a slow fire until dissolved: add, while cooling—

Oil turpentine, $\frac{1}{4}$ pint,
Laudanum, 5 ij.



McDOUGALL'S FLUID CARBOLATE.

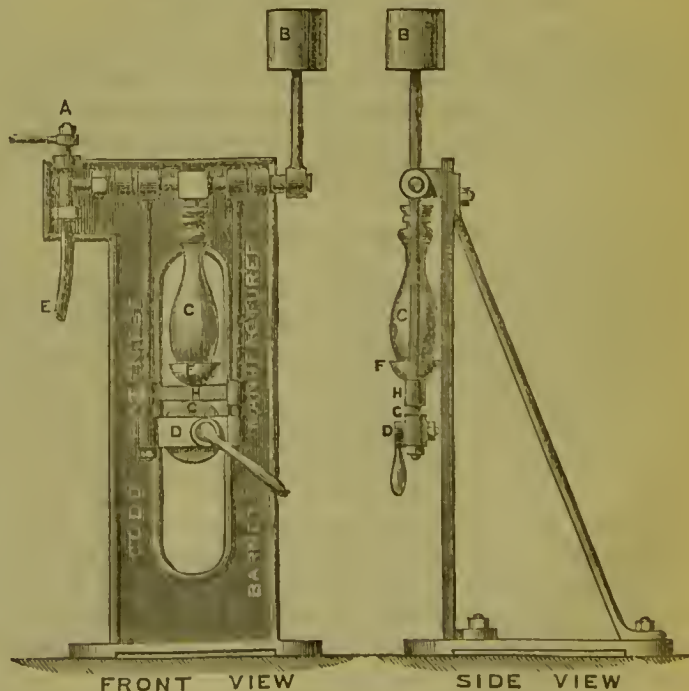
MESSRS. McDOUGALL BROTHERS introduce a new fluid preparation of carbolic acid in neutral combination. It is a solution of carbolate of lime and sulphate of magnesia, and is recommended not only as a disinfectant, but also for internal administration. Of course, it presents the valuable properties of carbolic acid in a milder form than by using the acid. For outward application to wounds and sores, this fluid will doubtless prove valuable.

Codd's Patent Aerated Water Bottle.

MESSRS. BARNETT AND FOSTER, of Forston-street, Hoxton, in addition to the “intermittent” bottle which we explained in Juno last, have taken up the manufacture of a bottle of a different construction altogether. In this bottle corks and wire are not wanted. A glass marble is contained within the neck of the bottle, and when the gaseous water is in, this marble is kept by the force of the gas pressed against a cork ring, which fits into a groove in the top of the neck, and therefore answers as a perfect stopper. To open the bottle it is necessary to push the marble down, which is accomplished by a small lever, or can be done by the fingers



if they are very strong. The marble is not allowed to fall into the liquid, for by so doing it would collect around it a considerable quantity of gas, which would escape. The lower part of the neck is contracted so as to keep the marble within that space. The advantages to the consumer of such a bottle as this are sufficiently obvious, but they are much more important to the manufacturer. Our practical readers will at once perceive from the engraving how simple the filling of these bottles becomes. A mere youth can conduct the whole operation.



The mode of filling is as follows:—The handle (communicating with the wheel or eccentric, a) is raised—this action at the same time lowers the slide H, and cup, F—the bottle is then placed in the cup, F, and the neck brought under the nipple of the apparatus; the handle should now

be lowered so as to press the bottle well up—this is done with the right hand; the left hand should now turn on the cock, A, the discharged carbonised water will then flow into the bottle. When partly full, no more will go in till some of the atmospheric air is got rid of, or sniffed, which is done by once or twice raising the handle slightly, this, by lowering the bottle, allows the atmospheric air to escape, and so makes room for the additional carbonised water. The bottle being now full, the cock, A, should be closed, and the swinging part, which contains the bottle, brought over in a reverse position to that shown in the drawing (this action brings the marble from the bottom to the top, or orifice, of the bottle, and so closes it); the counterbalance here comes into action, as it relieves the weight of the bottle arrangement.

The bottle, which is now closed by the internal pressure against the marble and cork in the neck, can now be taken out of its position by the same action of the eccentric and handle; and the parts which are for containing the bottle lowered ready for receiving a fresh one.

The saving of corks, wire, and labour by the adoption of these bottles is considerable, and soon pays for the extra expense involved in setting up the necessary fixtures.

ROBUR.

SOME blessing is announced as being in store for him who makes a blade of grass grow where it did not exist before. What, then, is due to the man or company that introduces a new spirit to a thirsty world? Robur is advertised as "the new tea spirit," a description which may lead some to suppose that it partakes of the virtues of the cup which cheers but not inebriates. What its connection with tea may be, we know not, but it does not rest in the flavour; and seeing that the world is a little over-supplied with alcoholic drinks already, we cannot congratulate the Robur Distillery Company, (Limited), on their efforts to add to our present abundant temptations another "seductive fluid."

ALEXANDRIA LAVENDER WATER.

Messrs. H. W. JOHNSON AND Co., of 35, Moorgate-street, are the proprietors of a very high-class Lavender-water which we have every confidence in recommending. Its fragrance is extremely rich and will render it a favourite perfume wherever it is introduced.

SARG'S GLYCERINE PREPARATIONS.

We have pleasure in noticing the very saleable articles put up by Sarg, Son, and Co., of Vienna, for the English market, and supplied here by Schmedes and Co., of 6, Castle-street, Falcon-square. First we have their pure glycerine in shilling bottles or in bulk, and Messrs. Sarg's article, though sold at a moderate price, has deservedly won a high reputation. Then we have a scented glycerine in 6d. and 1s. bottles; 1s. bottles of a very elegant liquid glycerine soap, which contains 40 per cent. of glycerine; 6d. bottles of a glycerine jelly; and 1s. cases of their well-known transparent glycerine soaps, in round or square tablets. We mention these articles in detail because they are most creditable manufactures, and deserve a good sale in this country and abroad.

FLEMING'S VEGETABLE MACHINERY OIL.

Messrs. A. B. FLEMING AND Co. have sent us a sample of their machinery oil which they sell at 3s. 6d. per gallon. It is sold with a guarantee that it is purely of vegetable origin

in order to remove one of the objections of insurance offices to establishments where mineral oils are employed as lubricators. This oil appears to have all the essentials of a good lubricating oil, as it is very unctuous and of the consistence of sperm. It is worth a trial.

Dentistry.

MADAME DE SWIDERSKA, D.D.S.

THE Countess Hélène Voryl de Swiderska was in London quite recently *en route* from New York to St. Petersburg. This is not simply a piece of court news, for this lady is something more than a Countess. She has recently graduated with honour from the New York College of Dental Surgery, and enjoys the distinction of being the first of her sex entitled to affix the professional D.D.S. to her name.

Madame de Swiderska's career has been singularly adventurous and interesting. She is a native of Lithuania, in Russia. She lost her mother at an early age, when her father, an eminent physician of St. Petersburg, who also holds the rank of general in the Russian army, devoted himself to her education and trained her to habits of scientific study far more serious than is common with young girls in Russia. At the age of 16 she married the Count de Swiderska, a member of the high nobility, who held an office under Government, but who had little fortune wherewith to support his title. She became the mother of a son, in whom all her hopes centered, and for whom she resolved to create a fortune to supplement the rank bestowed on him by his father. Moreover, she had long felt the need of an earnest occupation. For several years she had studied the natural sciences, music (for which she has a special talent), and art. Impelled, doubtless, by inherited proclivities—her uncle, brothers, and father were all physicians—she now determined to devote herself to some speciality of medicine, and on looking about her found none so available as dentistry, which is comparatively unknown in Russia. She therefore made the preliminary studies in medicine under her father's direction, and, after obtaining all the dental knowledge that could be gained in St. Petersburg, set out for Berlin, where she discovered that dentistry was even at a lower ebb than at St. Petersburg. To perfect herself in the science she judged it necessary to go to America; but here another difficulty arose: the American colleges did not admit women. Nevertheless, she determined to go thither, believing that to a resolute will nothing is impossible. She arranged her affairs in two days, arrived at New York last October. Having heard that the Grand Duke Alexis was in New York, she resolved to pay her respects to him and obtain from him a letter of recommendation to the consulate. Unfortunately on the day of her arrival he set out with his suite for Boston, where he was to stay only two days. On learning this she instantly followed him thither, repaired to the Tremont House, where she received a cordial welcome and the desired letters, and returned without delay to New York. Armed with her credentials, Madame de Swiderska next presented herself for admission at the College of Dental Surgery, and though at first refused, was finally suffered to enter, as a special favour, with a pledge that she would claim no immunity from duty on account of her sex. It was found that her preparatory studies were equivalent to two years of the collegiate course. She applied herself assiduously, rising at seven and studying till midnight daily; though she was greatly hampered by her imperfect knowledge of English, the first lectures being, as she says, Greek to her. With the proverbial linguistic quickness of the Slav, she mastered the language in three weeks, so as to understand it readily. Thenceforth she made rapid progress, passed a creditable examination, and received the first diploma of Doctor of Dental Surgery that was ever granted to a woman.

Having attained her goal, Madame de Swiderska determined to see something of America and the Americans before her return. She visited Washington, where she was introduced to the President, and many of the distinguished personages there, made a journey to Niagara, and mingled somewhat in the social circles at New York, where she was cordially received. She was warmly urged to remain

and practise her profession in America, but irresistible attractions drew her homeward, and at this time she is just about commencing her professional career in her native city.

Madame de Swiderska is about twenty-eight years old, and is singularly graceful and polished in manners. She has the tall, lithe figure so common to the Russians, with a brilliant complexion, sensitive mouth, deep violet eyes, and magnificent brown hair, whose luxuriance might well entitle her to the appellation of *la dame Russe aux longues tresses*, by which she was known on the ship on her way hither. A lady who can overcome such difficulties as lay in the path of this resolute Countess is sure to succeed in her profession, and it would be superfluous to pass the compliment.



ON the 5th ult. two boilermakers named Burges and Iles, who were at work at Messrs. Balter and Co.'s, tar and resin distillery, at Crew's Hole, Bristol, were suffocated. They had been engaged in repairing the interior of a resin still, and had been working there for several days, and it is supposed that the exhalation of carbonic acid gas suffocated them.

It is announced that Dr. W. A. Tilden has resigned his position as demonstrator in the laboratory at Bloomsbury-square, he having been recently appointed lecturer on chemistry in Clifton College. At the last meeting of the Pharmaceutical Council, a resolution was passed expressing the regret of the Council in losing his valuable services, and their great satisfaction with the zealous and able manner in which he had for nine years discharged his important duties. Dr. Tilden gained one of the Bell Scholarships in the first year of that competition. A complimentary dinner was given to this gentleman by some of his friends on the 25th ult. at which a cordially expressed address was presented to him the address bearing the signatures of the President, Vice-President, Treasurer, and other officers of the Society, and also of all the professors.

SAD DEATH.—On July 19, Mr. John Kemp, assistant to Messrs. Mitchell and Fraser, of Dunfermline, was drowned, while bathing. He was twenty-three years of age, and had lately passed the Major Examination of the Pharmaceutical Society, with honours.

A HARD CASE.—At Exeter Messrs. John and Frederick Stone, chemists, have been fined £5 for "keeping a male servant without a licence," a boy having been seen in the cellar cleaning boots, which it was thought belonged to the assistant in the shop.

Provincial Reports.

NORTHAMPTON.

AT a meeting of the Northampton Chemists' Assistants and Apprentices' Association, held on July 29th, Mr. Schacht's educational scheme was discussed. The President, Mr. H. J. Masters, after expressing his appreciation of Mr. Schacht's interest in the subject, said—"It is impossible for the third principle to be carried out if the second process, by which the aid is to be given, be adopted. With regard to persons eligible to earn prizes and payments, it seems scarcely a pleasant position for a chemist in business to be in, or fair to his apprentices, for both to be striving for the same prize. Then, again, how is it possible for associations to remunerate qualified teachers, if those members, who have passed the minor examinations, are not eligible to earn money for their association. I believe that associations consisting *only* of apprentices and assistants would be better attended, and prove more useful than one consisting of employers and *employés*; for what assistant would like to be asked a simple question in the presence of

his employer, and be unable to answer it? My opinion is, that all that is wanted is the present plan carried out more generously; that is to give help where there is a disposition evinced to help themselves. I shall now move—that in the opinion of this Association great credit is due to Mr. Schacht for the interest and trouble he has taken in pharmaceutical education; also, that the three principles he has laid down are very excellent, but believe, at the same time, it would be impossible for them to be carried out, if his scheme be adopted."

Messrs. Lance, Branson, Thomas, Mellor, Wallis, and Druce, continued the discussion, dwelling chiefly on the difficulties attending the simultaneous competition of principals, assistants, and apprentices, on the impossibility, in many cases, of attending twenty out of twenty-five lectures, and on the unfairness of the provision that the passing of the Minor examination should disqualify a student for earning money for his association, or prizes for himself.

Mr. Druce observed that the great unfairness of the proposed scheme was its local character; by that he meant that it could be only successfully adopted in a few of the largest towns, and where help was less required. If the resolution he had the honour of proposing were adopted, a student resident in the smallest town would have the chance of obtaining a prize of books, which would much assist him in his laudable endeavour of passing his minor or major examination; and why, because a student was resident in a small town, he should be debarred from competing, he could not imagine. He begged to move the following resolution:—"That no scheme can with any propriety be called just and universal that renders neither assistance nor encouragement to students situate in towns or districts where, by no possibility, associations can be established. This Association respectfully suggests, that if the system of payment by results, be adopted, the proposed examination for grants and prizes should be open to all *bona fide* assistants and apprentices of chemists and druggists, even if they should not be connected with an association."

The resolutions were all supported by the meeting, and after passing a very hearty vote of thanks to Messrs. Evans, Lescher, and Evans, for their handsome *materia medica* cabinet, the meeting adjourned.

ROCHDALE.

PHARMACEUTICAL EDUCATION.

A MEETING of the chemists of Rochdale was held in the Committee-room of the Public Hall, on Wednesday evening, July 17, 1872, to consider the scheme proposed by Mr. Schacht, for promoting pharmaceutical education in the provinces, the report of the Committee, and also the expediency of forming a chemists' association in Rochdale.

Mr. Connellor Booth occupied the chair.

After Mr. Schacht's scheme had been carefully gone through, clause by clause, it was moved and carried—"That, whilst this meeting approves of the principles laid down by Mr. Schacht, in his scheme for promoting pharmaceutical education in the provinces, it also considers that registered apprentices and assistants, who, by reason of distance or other circumstances, are unable to attend classes of any local association, should be eligible to be examined and receive the grants of the Pharmaceutical Society."

"That, in the opinion of this meeting, in order to give facilities for the increase of Class 1, the required aggregate number of marks be reduced from 80 per cent. to 75 per cent."

The report of the Committee appointed at a previous meeting, to inquire into the best means of forwarding pharmaceutical education in Rochdale, was next read. It recommended the formation of a chemists' association, the taking of a suitable room or rooms for the meetings of the members and classes, and advised the joining of the chemists' classes to the Government science classes, so as to conduct them more economically. The report was approved, and the Committee requested to prepare details of a scheme in accordance with its recommendations, and to report to a meeting to be held that day fortnight.

LEICESTER.

REPORT OF THE LEICESTER CHEMISTS' ASSISTANTS' AND APPRENTICES' ASSOCIATION,

For the Half-year ending August 1st 1872.

THE half-yearly meeting of the above Association was held at the Rooms, Halford-street on Thursday, August 1st; Mr. W. Bradley, President, in the chair. The following report, having been read, was unanimously adopted:—

"The Committee, in meeting the members of the Association at the close of the session, ask their attention to the following statistics:—During the half-year meetings have been held twice a week, at which papers have been occasionally read upon subjects of great importance to students, the greater number of evenings having been devoted to the systematic teaching of botany, chemistry, materia medica, and dispensing. The Committee take this opportunity of tendering their warmest thanks to the Class lecturers for their efficient aid, particularly as the large attendance at these attests the interest taken in them. Whilst giving their hearty thanks to the principals who so kindly promised papers at the beginning of the session, the Committee regret that some of these were not read, through the very pressing claims of business upon Leicester chemists during the last few months; in this way some little harm has been done to the Association. During the half-year four members have passed the Preliminary Examination, and one the Minor; in addition to this two gentlemen (members of the Association from the formation to the end of the last session) have passed the Major, one of them being first in honours. The Classes have met forty-three times, the average attendance of each being 10.5. Seventeen assistants have been members in the half-year, and sixteen apprentices; whilst twenty-seven principals have been subscribing honorary members. The Committee beg to return thanks to those chemists who have adopted the custom of closing their shops at not later than eight o'clock, as on this account the meetings at Halford-street have terminated at an earlier hour than formerly, which has given general satisfaction. Finally, in closing one of the most satisfactory reports ever presented to the Association, the Committee beg to draw attention to the balance in the hands of the Treasurer, the expenses of this session of the year being far in advance of the receipts."

A vote of thanks was then passed to the Committee for the able manner in which they had discharged their duties during the half-year.

The prizes for attendance were then presented by the chairman to Messrs. Bishop, Butler, and Gray, these having attended every meeting of the Association.

A very hearty vote of thanks was then carried unanimously to the President for his kind and able conduct in the chair during the half-year; also for his assiduous attention to the interest of the botany class.

The Secretary having read the names of those nominated to form the new Committee, several having declined to stand, the following seven were elected by ballot, who afterwards chose their own officers:—

S. H. Cadoux, A.P.S., President; W. B. Clark, P.C., Vice-President; E. H. Butler, A.P.S., Treasurer; W. Thirlby, A.P.S., Hon. Secretary; W. T. Elkington, E. J. Bishop, C. Raynor.

The expenses for the half-year amounted to £10 10s. 1½d., leaving a balance in hand of £1 instead of £4 15s., with which the session commenced.

OBITUARY.

It is our painful duty to announce the deaths of the following chemists and druggists:—

Mr. Henry Argles, of the firm of Argles, Son, and Stoneham, of Maidstone, died on July 6, at the age of 72. Mr. Argles was a J.P., and had twice been mayor of Maidstone, where he was held in universal esteem.

Mr. Edward Palk, of Southampton, who died on July 25, at the age of 73. This gentleman was also a J.P., and had been mayor of the borough. For years past he has been one of the most active and vigorous supporters of religious and benevolent institutions, and his death has called forth

universal expressions of regret. It is likely that some memorial will be raised by his fellow-townsmen.

Also died, on the 15th July, Mr. William Paine, pharmaceutical chemist, of St. Margaret's-street, Canterbury.

On the 10th July, Mr. Richard Lewins, chemist and druggist, of Morpeth.

On the 14th July, Mr. Richard Hardy, chemist and druggist, of Dicconson-street, Wigan.

On the 18th July, Mr. James Waits, chemist and druggist, of Poplar.



[The following list has been compiled expressly for the CHEMIST AND DRUGGIST by L. de Fontainemoreau and Co., Patent Agents, 4, South-street, Finsbury, London; 10, Rue de la Fidélité, Paris; and 33, Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

- 1290. H. A. Bonneville, of Paris. A new and improved medical injecting or irrigating apparatus. Dated 30th April, 1872.
- 1637. C. Moseley, of Manchester. A new method and means for condensing the vapours of coal-tar naphtha. Dated 30th May, 1872.
- 1797. H. Marrian, of Birmingham. Improvements in machinery or apparatus for manufacturing lozenges, medals and other similar articles of confectionery. Dated 14th June, 1872.
- 1806. W. C. Sillar, of Blackheath, Kent, R. G. Sillar, of Bolton, Lancaster, and C. Rawson, of St. Swithin's Lane. Improvements in treating animal matters in order to deodorize and decompose the same and to make a manure therefrom. Dated 15th June, 1872.
- 1851. V. van Baerle, of Worms, Germany. Improvements in the manufacture of soap or compositions for washing purposes. Dated 19th June, 1872.
- 1853. E. Abato, of Naples. Improvements in preserving food, or organic substances, and also in the machinery or apparatus employed therein.
- 1880. W. M. Brown, of London. An improved apparatus for extracting ammonia in the form of liquid ammonia from crude ammoniacal liquors. Dated 22nd June, 1872.
- 1892. G. A. Dorsett, of Rotherhithe, Surrey. Improvements in obtaining anthracene from heavy oils. Dated 22nd June, 1872.
- 1905. W. E. Newton, of London. Improvements in the manufacture of vinegar and in the acidulation or treatment of various liquids, and in the apparatus employed therein. Dated 24th June, 1872.
- 1931. J. S. Christopher, and J. F. Laekersteen, both of Lombard Court. Improvements in the manufacture of hydrogen gas. Dated 26th June, 1872.
- 1984. W. E. Gedge, of London. A new or improved process of preparing phosphorus. Dated 1st July, 1872.
- 1996. J. M. B. Baker, of Lennox-road, Southsea, Hants. An improved disinfecting and deodorizing apparatus for water-closets, and other purposes. Dated 2nd July, 1872.
- 2033. J. Miller, of Aberdeen. Improvements in purifying and decolorizing hydrocarbons. Dated 5th July, 1872.
- 2035. B. Todd, of Newcastle-upon-Tyne. Improvements in the treatment of gases and fumes. Dated 5th July, 1872.
- 2044. W. Weldon, of Putney. Improvements relating to the utilization of dilute chlorine. Dated 6th July, 1872.

Letters Patent have been issued for the following:—

- 3529. C. C. Molehin, of Westminster. An improved composition oil or liquid useful particularly for illuminating purposes. Dated 30th December, 1871.
- 140. C. Morfit, of Baltimore, U.S. Improvements in the method of refining fat oils, and more, particularly the crude oil of cotton seed. Dated 17th January, 1872.
- 145. A. McDougall, of Manchester. Improvements in the manufacture of sulphuric acid. Dated 17th January, 1872.
- 154. A. S. Stocker, of Horsleydown. Improvements in the application, construction, manufacture and combination of articles appertaining to infants' feeding bottles and other receptacles, and in the machinery, apparatus, process, and means to be employed in producing and finishing the same, part of which process is applicable to the production of other articles. Dated 18th January, 1872.
- 210. W. Bradburn, of Wodnosfield, near Wolverhampton. A new application of the gases and vapours or fumes, resulting from the burning of pyrites, slanders, and of the acid liquid produced by the absorption thereof. Dated 23rd January, 1872.
- 248. H. Aylesbury, of Gloucester. Improvements in stoppers for bottles. Dated 25th January, 1872.
- 277. J. E. T. Woods, of Camberwell, Surrey. Improvements in reverberatory and other furnaces for chemical purposes. Dated 29th January, 1872.
- 305. J. A. Jacques, of Tottenham, and J. Banks, of Wood Green. Improvements in the manufacture of surgical instruments. Dated 31st January, 1872.
- 413. J. Young, of Kelly, Renfrew. Improvements in the treatment of natural petroleum. Dated 8th February, 1872.
- 617. J. Young, of Kelly, Renfrew. Improvements in treating hydrocarbons. Dated 28th February, 1872.
- 618. J. Young, of Kelly, Renfrew. Improvements in apparatus for obtaining hydrocarbons from shale, coal, or other similar substances. Dated 28th February, 1872.

799. M. Benson, of London. Improvements in washing, cleansing, and purifying petroleum, and other kinds of oil, and in the apparatus for performing the same. Dated 16th March, 1872.
1176. W. R. Lake, of London. An improved process of treating animal and vegetable fats or greases for the purpose of obtaining stearine and oleine therefrom. Dated 19th April, 1872.
1299. J. Bending, of Oxford Street. Improvements in apparatus for producing vapours for medicinal purposes. Dated 30th April, 1872.
1873. T. G. Denne, and A. Heitschel, both of Mile End. Improvements in preserving meat. Dated 6th May, 1872.
1420. K. H. Cornish, of Mayfair. Improvements in apparatus used for the manufacture of gas, applicable also to that employed for the distillation of paraffin and other volatile fluids. Dated 10th May, 1872.
1525. E. Solvay, of Brussels. Improvements in the manufacture or production of carbonates and bicarbonate of soda, and accessory products thereof, and also in apparatus used in such manufacture. Dated 18th May, 1872.
1596. H. Figalner, of Milan, Italy. Improvements in voltaic or galvanic batteries. Dated 25th May, 1872.
- Specifications published during the month :—
Postage 1d. each extra.
3116. T. Terrell and others. Manufacturers of sulphuric acid. 4d.
3119. J. Marshall. Moulds for pressing and extracting oil from seeds, &c. 8d.
3143. J. Hall and others. Manufacture of soda and potash, &c. 4d.
3174. F. J. Jones. Smelting oxides of iron. 1s. 10d.
3178. J. H. Johnson. Artificial dentures. 4d.
3180. J. V. P. Lagrange. Purifying and clarifying saccharine juices and syrups. 6d.
3183. A. Annandale, jun. Treating waste acids and alkalies. 4d.
3188. T. F. Henley. Preserving liquid organic substances. 4d.
3192. J. Hargreaves. Purifying dilute chlorine. 4d.
3195. T. Atkinson. Treating diseased cattle. 4d.
3213. J. Paterson. Capsuling bottles, &c. 1s. 2d.
3241. J. Hodges. Purifying paraffin. 10d.
3244. J. Leetch. Detergent compound. 4d.
3249. L. Fortoul. Treating fatty bodies. 4d.
3257. C. Nightingale. Respirators. 6d.
3261. J. J. Knight. Manufacture of caustic, soda, and potash, &c. 6d.
3262. H. Brooks. Feeding bottles. 4d.
3286. J. J. Spear. Stopper for aerated liquids. 4d.
3305. A. Ball. Invalid beds and couches. 1s. 6d.
3311. H. Larkin and another. Reducing metallic chlorides. 4d.
3387. A. Vazquez and another. Preserving meat, &c. 4d.
3394. D. Kilpatrick and another. Applying galvanism. 4d.
3407. R. Pnushon. Preserving meat. 4d.
111. J. Sullivan. Apparatus for administering pills. 8d.
525. W. R. Lake. Packing caustic alkalies, acids, &c. 8d.

Trade Memoranda.

MESSRS. H. GILBERTSON and SONS, druggists' sundriesmen, have removed from Ludgate-hill to 2, Old Bailey.

Mr. E. Moore, of Tewkesbury, has succeeded to the business lately carried on by Mr. Wall in Cheltenham.

We may call attention to the handsome style in which the Concentrated Pure Malt Vinegar Company puts up 1s. bottles of its speciality. We have before remarked on the strength and excellent flavour of this vinegar, which in these shilling bottles is well suited to chemists' sale.

At the commencement of 1871, the rates of duty chargeable on chloroform, were 3s. per lb.; but this was altered last year to 2s. A duty on chloral hydrate of 1s. 3d. per lb. was charged, and the duty upon iodide of ethyl was diminished from 14s. per gallon to 13s. These are the most important alterations in the Customs' tariff during the past year, as connected with the trade of chemists and druggists. The gross amount of duty collected during 1871 on chloroform was £172; on chloral hydrate, £47; on collodion, £11; on sulphuric ether, £124.

The Litre Bottle Wine Company have recently appointed the following additional agents for the supply of their wines in litre bottles:—Rogers and Co., Birmingham; Tilsley, Berriew; Anthony, Bedford; Wooster, Turnham-green; Wilson and Co., Maidstone; Ryley, Derby; Alcock, Sheffield; Robinson, Sheffield; Podmore, Liverpool; Wood, Manchester; Clarke, Rugeley; Branson, Stoke-on-Trent; A. Smith, Penrith; J. Smith, Morecambe; Baxter, Lancaster; Ogilvie, Glasgow; Carr, Dumbarton; McMillan, Helmsboro'; Mitchell, Esher; White, Gourock; Drysdale, Rothesay; Crawford and Down, Stirling; Manson, Thurso; Lillie, Forres; Grant and Stephen, Aberdeen; Stewart, Broughty Ferry; Mitchell, Dundee; Farrant, Nottingham; Tomlin-

son, Wednesbury; Parker, Darlaston; Astley, Great Bridge; Johnson, Willenhall; Murray, Edinburgh; Russell, Falkirk; Hildick, Walsall.

Copy of a curious prescription lately sent to a chemist at Middlesborough.

	Name and Age.	Education.	Offences.	Sentence.
North O—y, Sessions.	* William B—y, 14 months.	£ s. d., as far as pence are concerned.	+ Teething.	Powders.

* Supposed to have lived before the flood.

+ Understood to be cutting his teeth, whilst his parents know *theirs* are cutting them. Rapidly too.

JENKINS AND THE CLAIMANT.—An item of provincial news is to the effect that as "the Claimant" passed through Gloucester he was presented by a Mr. Jenkins with a bottle of corn-solvent. Holders of Tichborne Bonds will be glad to hear that there is something solvent about him!

EARLY CLOSING.—The following chemists of Peterborough have announced that their respective establishments will be closed every evening but Saturday at seven o'clock:—Messrs. John Bright, Alfred Glew, Marshall Heanley, Henry Loal, John Parnell, J. H. Pearson, R. and J. R. Sturton, John Whitwell, and Stephen Willson.

GEORGE JOHNSON, CHEMIST AND DRUGGIST, ASTON-ROAD, BIRMINGHAM.—A second meeting of creditors in this matter was held on the 25th ult., at the offices of Mr. W. H. Griffin, solicitor, Bennett's Hill. Mr. Jacob Rowlands and Mr. Smith, accountant, of Bristol (the trustee) appeared for the creditors. A resolution for liquidation of the estate passed at the first meeting.

HONOURS TO THE TRADE.—We observe from the Victorian journals that two chemists and druggists resident in Victoria, Australia, viz., Mr. Edward Garsed, of Sandhurst, and Mr. Robert Wood Wilkinson, of Talbot, have been raised to the magisterial bench. Both these gentlemen, we believe, hail from Yorkshire; the former from Wakefield, the latter from Sheffield. It is gratifying to find gentlemen connected with the business who are thus respected by their fellow-colonists and honoured by the State.

THE PROPRIETORSHIP OF "HENDERSON'S ELIXIR."—Sheriff Tait has pronounced an interlocutor reversing the finding of Sheriff Barclay in the case tried at the Perth Sheriff Court, in which Mr. Alex. Glass, druggist, Methven-street, sought to restrain Messrs. Dandie, Newby, and Dandie, High-street, from selling a medicine prepared by themselves as "Dr. Henderson's Concentrated Stomachic Vegetable Elixir," a compound of which Mr. Glass says he is sole proprietor. Sheriff Tait finds that the respondents have illegally sold the elixir, and grants interdict as craved, finding also the petitioner entitled to expenses.

BURGOYNE, BURBIDGES, AND CO.'S ANNUAL EXCURSION, ATHLETIC SPORTS, AND DINNER.—On Saturday, July 20th, the *employés* connected with the establishment of Messrs. Burgoyne, Burbidges, and Co., the wholesale druggists, of Coleman-street, went to Ascot to hold their annual dinner

and athletic sports. At 11 o'clock the sports commenced with a race of 440 yards for a silver challenge cup, given by the firm. The fortunate winner was Mr. F. Goddard. Other races followed for prizes of various amounts. The day was exceedingly fine, and the sports were kept up with great enthusiasm until half-past two, the hour appointed for sitting down to dinner. The dinner was spread under a large marquee in the grounds of the Royal Hotel, Ascot-heath, and the chair was occupied by Frederick Burbidge, Esq. The proceedings were enlivened with vocal music, and the day was thoroughly enjoyed by everyone present.

GAZETTE.

PARTNERSHIPS DISSOLVED.

BRANFOOT and HATELY, Matlock-street, Sunderland, chemical manufacturers. Debts by J. Branfoot.
MOORE, HUGH, and Co., 57, Capel-street, Dublin, druggists. May 27, as regards Hugh Moore.
PEAL and CROSSBY, 83, Bold-street, Liverpool, homœopathic chemists and druggists. Debts by C. J. Peal.
POCKLINGTON and HOLLOWAY, High-street, Upper Sydenham, Kent, chemists. Debts by J. Pocklington.
SADLER, F. and A., Tamworth, Stafford, druggists and grocers.
TAYLOR, JOSEPH, and Co., Golcar, near Huddersfield, drysalts and oil dealers.
WHITE and TANNER, Kempsey, Worcester, surgeons. Debts by R. C. Tanner.

ARRANGEMENTS OR COMPOSITIONS.

COLLINS, ROBERT NELSON, trading as R. N. Collins and Co., 36, Walbrook, City, and Millwall, wholesale druggist.
FARRAR, WILLIAM, West Hartlepool, chemist and druggist.
JONES, ROBERT MORRIS, Bank-buildings, Abergyle, Denbigh, chemist and druggist.
LAVENDER, JOSEPH, Somersham and Earith, chemist, druggist, news-agent, and general dealer.
LIGHT, JOHN HENRY, 51, Castle-street, Bristol, chemist and druggist.
PITT, WILLIAM BARTLETT, Coldridge, chemist, druggist, and general shopkeeper.
ROLLASON, ALEXANDER, 10, Coburg-road, Montpelier, Bristol, chemist.
SMITH, THOMAS, 57, Roe-street, and Pickford-street Chemical Works, Macclesfield, drysalts.
STOCKMAN, FREDERICK, Forton-road, Gosport, chemist and druggist.
TAYLOR, WILLIAM, 61, Market-street, Heywood, chemist, druggist, and dentist.

NEW CHEMICAL COMPANIES.

THE Albion Alkali Company has been formed for the purpose of carrying on the business of manufacturing alkali, soda, and other chemical products at Lugsdale, in Widnes, Lancashire. It was registered on the 26th ult., with a capital of £20,000 in £10 shares. The first subscribers are:—E. B. Rigby, Pex Hill House, Cronton, Lancashire, alkali manufacturer, 200 shares; J. S. Rigby, Pex Hill House, Cronton, Lancashire, chemist, 10 shares; J. Knight, Farnworth, near Warrington, chemical manure manufacture, 10 shares; W. Rigby, Leinster-street, Runcorn, Chester, ship-broker, 10 shares; W. Newsome, Pittville-terrace, Ditton, Lancashire, general agent, 10 shares; J. Windus, Hilderspool Causeway, Chester, iron founder, 10 shares; P. D. Carr, 4, Halstead-road, Seacombe, Chester, broker, 5 shares.

Another new company is the Bagillt Chemical Works Company, formed for the purpose of carrying on business at premises lately occupied by Messrs. Newton, Keates, and Co., at Bagillt, Flintshire. The company was registered on the 22nd ult., with a capital of £20,000 in shares of £50 each. The first subscribers are:—G. Lake, jun., Water-street, Manchester, warpsizer, 40 shares; F. Ward, 24, Tamworth-street, Hulme, hook-keeper, 15 shares; J. Bradbury, 6, Brunswick-terrace, Shetford, manager of size works, 7 shares; Rebecca Bradbury, Stafford-street, Eccleshall, widow, 1 share; W. Blench, Hampden-street, Gateshead-on-Tyne, 2 shares; W. Pierce, Bagillt, maltster and brewer, 25 shares; T. Hall, Simpson-street, Stockport, 10 shares.

LAW AND POLICE.

ROWLAND V. BREIDENBACH.

THIS bill was filed in December, 1869, by Messrs. A. Rowland and Sons, of Hatton-garden, against the late Mr. Henry Breidenbach, of New Bond-street, claiming an exolu-

sivo right in the terms "Macassar Oil," "Kalydor," and "Odonto," as denoting articles manufactured by the plaintiffs under these respective names. The occasion of the suit was an advertisement inserted in the *Times* by the late Mr. Breidenbach, in December, 1869, offering for sale a "Christmas-box," containing 32s. 9d. worth of "toilet luxuries" for 12s., among such "toilet luxuries" being "Macassarine oil," "Kalydor," and "Odonto," price 1s. each. Upon the publication of this advertisement an injunction was granted upon the *ex parte* application of the plaintiff against the use of the word "Macassarine," as applied to oil, but was afterwards dissolved, the Court being of opinion that the term was so distinct from that used by the plaintiff, that the public could not be deceived. Since that time, and very curiously on the same day, both the plaintiff and defendant died; and, the litigation having been revived by the respective representatives, the case has now been heard upon motion for decree, but as the claim to the word "Macassar" has been given up, the relief now sought relates solely to the Kalydor and Odonto.—The evidence was voluminous, no less than 89 affidavits, containing 900 folios, having been filed by the plaintiffs in support of their contention that they have acquired an exclusive right to the terms "Kalydor" and "Odonto."—Mr. Fry, Q.C., Mr. Day, Q.C. (of the Common Law Bar), and Mr. Bradford appeared for the plaintiffs; Mr. Southgate, Q.C., and Mr. Brooksbank for the defendants.—The Master of the Rolls, who had taken time to consider his judgment, said he was satisfied that the terms "Kalydor" and "Odonto" had become *publici juris*. There was evidence of an article called "Kalydor" having been openly sold by as many as thirty-six tradesmen besides the plaintiffs since the year 1848, and there was similar evidence before the Court with respect to the article called "Odonto." His Lordship said that from the printed documents he had found both Kalydor and Odonto advertised as being manufactured by Delcroix, Devereux, Lorenzo, and many others, as early as 1848. There was not the slightest doubt that those words had become *publici juris*, and might be adopted by anybody; the only restriction was that they must not be represented to be "Rowland's" preparations. No such representation had been made in the present case by the defendant, and his lordship was clearly of opinion that the bill must be dismissed with costs.

A NEW CRIME.

Mr. A. F. Akehurst, chemists' transfer agent, of 26, Farringdon-road, London, and Brighton, appeared at Croydon Petty Sessions on the 27th of July, charged by the London, Brighton, and South Coast Railway Company with having used the "communicator" on that line without sufficient cause. Mr. Rugg and Mr. Purchas, both of Brighton, were charged at the same time with having wilfully interfered with the comfort of passengers. Mr. Akehurst pleaded justification of his conduct.

From the evidence it appeared that on the 13th inst. the defendants, with Mr. Thomas Simons, a butcher, of 95, Lewes-road, Brighton, were passengers in the six o'clock express train from London to Brighton, which stops at Croydon only. They occupied the same compartment. After the train had left Croydon, Rugg began to make a great noise. Purchas requested him to be quiet, and made use of an irritating expression. Rugg told him to repeat what he had said. Eventually he did so, whereupon Rugg struck him, and then followed a desperate fight between the two, in the course of which they became covered with blood. Mr. Akehurst and Mr. Simons succeeded in parting them for a few minutes, but they sprang to their feet again simultaneously, and resumed the combat with redoubled fury. All further efforts of Mr. Akehurst and Mr. Simons to separate them proved vain, and as they, like the combatants, were covered with blood, they became alarmed, and at the request of Mr. Simons, Mr. Akehurst pulled the cord of the communicator. The guard stopped the train between Stoatsnest and Starbridge signals, and Rugg and Purchas, who were still fighting desperately, were then separated. The Bench, after a careful investigation of the facts, dismissed the summons against Mr. Akehurst, Mr. Edridge, the chairman, stating that the magistrates were of opinion that, under the circumstances, he was quite justified in using the communicator, not only for his own safety, but for the safety of the two men who were fighting. Purchas was fined 10s. and 16s.

costs, and Rugg 40s. and 15s. costs, or one month's imprisonment. The chairman added that the Brighton Railway Company would not have done their duty if they had not brought this case before the Bench.

THE "LANCET" LIBEL CASE.

At Guildford, on July 31st, the case of *Maunder v. Wakley* came on before Mr. Baron Martin and a special jury. This was an action brought by the plaintiff, who is a surgeon attached to the London Hospital, against the defendant, who is the proprietor of the *Lancet*, for a libel published in that journal. Mr. Hawkins, Q.C., Mr. Day, Q.C., and Mr. Talfourd Salter were counsel for the plaintiff; Serjeant Parry, Sir G. Honyman, Q.C., and Mr. A. L. Smith appeared for the defendant. The article complained of commented on certain matters with which Mr. Maunder was connected, and some very offensive expressions, such as "spy" and "informer," had been made use of. Mr. Hawkins, addressing the court, said that the action had been brought by Mr. Maunder solely for the purpose of vindicating his professional character and his honour, and this was the only object he had in view. He had not the slightest intention or desire of putting money into his pocket by the proceeding he had adopted, and would therefore be perfectly satisfied if all imputations upon his professional character and personal honour were withdrawn; and, as he understood his learned friend, Serjeant Parry, was prepared to adopt that course, the plaintiff would be perfectly satisfied, and there would be no necessity for proceeding any further with the inquiry. Serjeant Parry said the Messrs. Wakley considered that they were merely discussing a public question; but he was instructed to state that in the remarks that appeared in their journal they had no intention in the slightest degree to cast any imputation upon the professional character or the private honour of the plaintiff, and that if any offensive terms were made use of, they did not and were not intended to apply to the plaintiff, and he withdrew all such imputations in the fullest possible manner. A nominal verdict for the plaintiff with 40s. damages was then recorded.

A REVERSE OF FORTUNE.

At the Cardiff Police-court on August 2nd William Mackley, formerly a chemist's assistant, was charged with begging and being an impostor. Mr. F. W. Joy, chemist, Duke-street, local secretary of the Pharmaceutical Society, said the prisoner came to his shop on Wednesday, and said that he was a Mr. Teear, a chemist, of Leicester, and that he had been broken down by ill health. He was making his way down to Neath to his wife's relations. Witness believed the story, and gave him 1s., and also recommended him to a house for a night's lodging. He came again on Thursday, and said he had seen Mr. Kernick, who had proposed amongst the members of the profession that his (the prisoner's) wife should have her railway fare paid to Neath, and that they would pay the fare between them. Witness then went to two or three chemists in the town soliciting their contributions. He had previously told the prisoner that if he found everything right he would give him the tickets for the journey to Neath. Witness could not find the address of the prisoner's brother-in-law at Neath in any directory as given by the prisoner, and telegraphed to Leicester, and got a reply, in consequence of which he gave the prisoner in custody. P.C. Marshall said he apprehended the prisoner in Mr. Joy's shop. The prisoner said he was formerly an assistant in the employ of Mr. Teear, a chemist, of Leicester, and previously to that time he was four years in the British service. He had since been very unfortunate, which had led him to falsify his name and to tell lies. He was down in the world, and could not get into his profession again. He had even tried to get an honest living by hay-making, but could only earn 1s. 8d. a day. He was sentenced to seven days' imprisonment with hard labour.

TRADE MARKS.

At the Mansion-house, on August 7, Mr. William Jones Williams, a chemist in Cannon-street, appeared before Alderman Sir Robert Carden on a summons, charging him with contravening a provision in the Merchandise Marks Act of 1862, the fourth section of which provides that the selling of articles with forged or false trade marks shall be

punishable by a penalty equal to the value of the article sold, and a sum not exceeding £5 nor less than 10s. Mr. St. John Wontner, solicitor, appeared in support of the summons; Mr. Thomas Beard for the defence. The complainant was Mr. Walter Breton, a pharmaceutical chemist in Walbrook. Up to October last he had carried on business in Cannon-street for about eight years, and the defendant had been in his service as assistant for about three years. From August, 1870, to April, 1871, he was absent from business on account of illness, and the defendant was left in charge, having in the meantime access to all his books and papers. On his return certain facts came to his knowledge, in consequence of which he discharged the defendant. His lease was not renewed at its expiration, and he took a shop in Walbrook. Upon that the defendant began business on his own account in the shop in Cannon-street which the complainant had been obliged to leave. The complainant has a patent medicine of his own invention, as he alleged, called the Patent Corn Solvent, which was sold in bottles contained in a wrapper bearing his name, along with a brush for using it. He now charged the defendant with infringing his interest in the invention, which he claimed to be sole and exclusive. It was an article which required the Government stamp of 1½d., and could not be legally sold without. The trade mark was a dog's head. Evidence was given to show that the defendant had offered some of the preparation in question for sale at his shop in Cannon-street, after putting a stamp upon it and writing his own name across the wrapper. On being told by the person who was about to purchase it and had given it back that his name ought not to appear upon it, he replied, in effect, he had as much right to the recipe as Mr. Breton had, and would guarantee it to be the same article as that sold by Breton, whose recipes, he added, had all been copied from those of Messrs. Glaisyer and Kemp, of Brighton, in whose service the complainant had formerly been. The complainant denied that he had pirated the corn solvent in question from Glaisyer and Kemp. On the contrary, he said, he had introduced it to them. For the defence, Mr. Beard submitted that the case did not come within the meaning of the statute, there being no evidence that the wrapper used by the defendant was forged, inasmuch as it was one, among others, which the complainant had left on the premises to which the defendant had since removed. He contended also that there had been no wrongful use of the complainant's trade mark, if, indeed, trade mark it could be called. Sir Robert Carden said it was quite clear to him that the defendant had taken an unfair advantage of the complainant, and he fined him 20s. and costs.

SLANDERING A CHEMICAL MANUFACTURER.

The case of *Wilkinson v. Barlow*, tried at the Manchester Nisi Prius Court, on the 7th inst., revealed facts of some interest to the readers of the *CHEMIST AND DRUGGIST*. It was an action for slander, and the facts, as stated for the plaintiff, may be thus epitomised:—The plaintiff, Mr. B. Wilkinson, an indigo refiner and manufacturing chemist, of Church, near Accrington, was formerly engaged in the occupation of traveller for Messrs. H. Berry, jun., Sons, and Co., manufacturing chemists, of Church, and this position was now held by the defendant, Mr. E. Barlow. Towards the end of 1864 the plaintiff left the service of the Messrs. Berry, and became agent for an aniline manufacturer; and in the following year he started business for himself, as a chemical manufacturer. He introduced the defendant to the Messrs. Berry, and also to many of his customers while traveller for the Messrs. Berry. In the year 1869, however, it came to the knowledge of the plaintiff that the defendant had put into circulation certain reports inimical to his commercial reputation, generally to the effect that he knew nothing about his business, that he employed men who were ignorant of the manufacture of chemical extracts, and that the extracts which he sold were not of a character which he represented them to be. In consequence of these statements the plaintiff discovered that his business had received considerable injury; and he accordingly instructed his solicitor to write to Mr. Barlow, demanding an apology, and if this were refused to commence legal proceedings, in the nature of an action for slander. Subsequently to this the plaintiff received from a friend of the defendant a letter, promising that the latter would never bring forward the

plaintiff's name again, in connection with business transactions. The plaintiff felt satisfied with this assurance, and the matter for the time there ended. Immediately afterwards, however, the plaintiff discovered that the defendant had been spreading the same reports as before, to his disadvantage, wherever he sold his drugs. Amongst other things the defendant remarked of the plaintiff to one of his customers, "he can't make extract of indigo fit to send into the market. He was once a tub-thumper (cooper) at our place." By means of this defamation the plaintiff's Scotch business had been destroyed, and he brought the present action for damages.—The result of the trial was that before the plaintiff's case had closed it was arranged that a verdict should be taken in his favour, damages 40s.

On August 8, at Southwark Police-court, Frank Gypson, 36, was charged with embezzling about £160 received by him for and on account of his employers, Messrs. Yates and Co., wholesale chemists, Park-street, Southwark. The prisoner had been in their employ as ledger clerk at a salary of £150 a year. It was not his duty to receive money; in fact, he was forbidden to do so. Notwithstanding, he had collected various sums from customers, in one instance intercepting a letter enclosing a check for £9 18s., and converting it to his own use. They had discovered deficiencies amounting to upwards of £160., which had been going on for three years past. The prisoner pleaded "Guilty," and threw himself on the mercy of the Court and the prosecutor. He trusted they would deal leniently with him for the sake of his wife and family. The prosecutor wished his worship to deal with him, and not send him to trial. Mr. Benson sentenced him to three months' hard labour.

MR. WANKLYN, F.C.S., VALUING HIMSELF.—WANKLYN V. GAMGEE.

At the Guildford Assizes, August 9th, an action was tried between Mr. Wanklyn, the analytical chemist, and Mr. John Gamgee, the well-known veterinary surgeon, proprietor of the *Milk Journal*, and introducer of chloralium. Mr. Prentice, Q.C., and Mr. Joyce were for the plaintiff, and Mr. Serjeant Robinson for the defendant. The claim was for some £200, which the plaintiff asserted was a balance of account due to him for professional services.

In January, 1871, Mr. Gamgee had established the *Milk Journal*, and in connection with that he had also established a laboratory for the analysis of samples of milk, and Mr. Wanklyn was engaged to superintend this laboratory. The question in the cause was on what terms he had obtained this co-operation, and according to the defendant's view Mr. Wanklyn was a sort of co-adventurer, while Mr. Wanklyn's case was that he was to be paid for his services at regular professional rates. In March, 1871, Mr. Gamgee wrote to Mr. Wanklyn,—"That as superintendent of the laboratory, and so long as you are connected with it, you shall receive one-half of the total receipts by subscriptions and determination fees, after payment of expenses. Please acknowledge receipt of this letter, stating that you accept the terms." Mr. Wanklyn wrote accordingly, "I agree to the above terms;" but his case was that the services he rendered and for which he sued were not fairly within the agreement. However, the *Milk Journal* and its laboratory went on during 1871, and at the end of the year there was a *résumé* of its labours during the first year of its existence, which concluded by expressing the conviction that "they had demonstrated the existence of a terrible evil, and they would do their utmost to root it out." It was stated that upwards of 1,000 analyses of milk had been made. Any one who pleased, either a consumer or a vendor of milk, could send milk to the laboratory to have it analyzed at a certain rate of charge; but in the case of a vendor, it would seem that his name was not entered among the list of sellers of genuine milk, except on the analysis of a sample casually purchased for the laboratory. It was admitted that the analyses were made by the assistant under the direction and superintendence of Mr. Wanklyn, and the assistant stated that they could do thirty a day, though they had never, in fact, done more than twenty a day. In the meantime analyses were made of other articles of diet, as meat, anatto, and so forth. It appeared that the enterprise, however advantageous to the public, did not prove profitable in a pecuniary point of view. Mr. Gamgee has written to the *Times* to contradict this assumption. The Government, however, applied to

Mr. Gamgee to have sixty analyses made for them by the chemist who made the analyses for the journal, and they employed Mr. Wanklyn to make them, paying him £100. Mr. Gamgee insisted on the one hand that this was a benefit derived by Mr. Wanklyn under the agreement, and that the obtaining of such advantages was one object of Mr. Wanklyn's entering into the agreement, and on the other hand he insisted that the money thus received came within the agreement, and that therefore he, Mr. Gamgee, was entitled to half of it. In the result the parties differed, and this action ensued, in which Mr. Wanklyn claimed about £500 for the professional services he had rendered. The particulars of the claim in the action were as follows:—

Preparing fifty gallons of chloralium	£21	0	0
One thousand analyses of milk, at 5s.	250	0	0
Analyses for Article on "Normal Milk"	52	10	0
Articles on anatto, &c.	15	15	0
Article on butter	5	5	0
Milk assay	7	17	6
Analyses and report upon a meat-preserving process	105	0	0
Analyses of carbonate	1	1	0
Analyses of phosphate	5	5	0
Cash advanced	50	0	0
	£513	13	6
Credits for cash—£161 15s., £99, £1 5s., £50..	312	0	0
Balance	£201	13	6

The £50 claimed as money advanced was the £50 received by Mr. Gamgee as half of the £100 received from the Government. On the other side the defendant contended that all that was due under the agreement had been received, and that anything not within it had been paid for. As to the article on "Normal Milk," charged £52 10s., it occupied not three columns of the *Milk Journal*—about as much as a column and a quarter of the *Times*. As to the charge of £105 for analysis of meat-preserving process, Mr. Wanklyn's case was that there was a process for preserving meat to come from the River Plate, and that Mr. Gamgee promised him 100 guineas for an analysis of it and article upon it, whereas Mr. Gamgee said he gave him £10 for it at the time, and his case was similar as to any service not covered by the agreement.—The learned Judge (Baron Bramwell) summed up the case to the jury—an eminently rural jury, says the *Times*—very strongly in the defendant's favour. He said the plaintiff had accepted the terms proffered by Mr. Gamgee, and in the face of those terms he claimed to charge at the usual professional rates. The learned Judge commented upon the charges contained in the plaintiff's particulars. As to the analyses they were no doubt done, but the case for the defence was that they were done under an agreement under which they were not to be paid for in the ordinary way, but they were to be done in the course and prosecution of an enterprise in which the parties were mutually interested, and in which they were to obtain other advantages and realize other benefits than direct payments by the plaintiff. The analyses, when published, would bring applications from persons who desired their milk to be analyzed, and then each party was to have half the fees received. The jury must consider whether the letter was more consistent—reasonably understood—with the case for the plaintiff or defendant. As to the analyses for the article on "Normal Milk"—a charge of 50 guineas—all he could say was that if it was a just charge, it was very wonderful. It was remarkable, said the learned Judge, that in a draft of the bill of particulars handed up to him the sum originally charged appeared to have been £20, and it was altered to £52 10s. Really, men who intended to make such outrageous charges should at least give notice that they meant to make them. He should be very glad if literary or scientific services were paid at such a rate; but, unfortunately, they were not so. Then take the charge of £50 "as money advanced" to Mr. Gamgee. It was a sort of test item by which to test the plaintiff's charges. Why, that £50 was the half of the £100 received by Mr. Wanklyn from the Government for the analyses he had made, and the half of which was claimed by Mr. Gamgee as included in the agreement, his view being that, as the *Milk Journal* brought the job, he should share in the profit of it. It had been paid to

Mr. Gamgee, and now it was claimed as money lent to him. Was it possible that this could be a fair claim? and if not, what would the jury think of the rest of the claim? If the whole of the plaintiff's services were to be paid for at the rates charged by him, the *Milk Journal* would have cost its projector £15,000. On the whole case he left it to the jury to say whether the plaintiff's claim in whole or in part was made out.—The jury, after some consideration, retired with the papers to consider their verdict, the foreman stating that there was only one of them for the plaintiff.—The learned Judge said if he were that one he should think it most likely that the others were right, and should yield his opinion to theirs.—The jury, however, retired to consider their verdict, and after the lapse of some time returned with a verdict for the defendant, of which the learned Judge pronounced an emphatic approval.

STEALING DRUGS.

At the Wolverhampton Police Court on the 19th inst., William Walker, a man in the employ of Mr. Weaver, chemist, Victoria-street, was charged with stealing several bottles containing quinine, sauce, and other articles, the property of his master. The Mayor said it was a very serious thing indeed that masters could not keep a stock of goods without being robbed, and taking into consideration a recommendation to mercy on the part of the prosecutor, the prisoner was sentenced to two months' imprisonment in Stafford gaol.



THE SO-CALLED DEATH FROM NITROUS OXIDE GAS.

(TO THE EDITOR OF THE "CHEMIST AND DRUGGIST.")

SIR—Your account of the death of Mrs. O'Shaughnessy of New York, in your impression of 15th June last, is likely, not only to do injury to manufacturers of inhaling apparatus but also to limit the use of a safe and agreeable anæsthetic. Your further account in the July number, although you give a more correct statement, is not sufficient to dispel the fears doubtless entertained by many of your readers respecting the gas. Those who wish for full particulars of the case should read the *British Journal of Dental Science*, June number, and the *Lancet*, May 25th. The following is a quotation from the latter:—"The nitrous oxide could have had no more to do with the fatal issue, either directly or indirectly, than if it had never been brought into the room. The patient manifestly fainted from terror, doing so as soon as her state of mental tension was relaxed by the operation being completed. Her syncope was just a result of the reaction of an overstrung nervous system, and if Mr. Newbrough had only laid her flat on the floor, she would probably have recovered in five minutes, have paid him his fee, and walked away from West 34th Street as well as she entered it."

Had the gas been persevered in, instead of causing death, it would probably have saved the poor lady's life by preventing the shock to the system.

I trust you will find a place in your columns for the above.

E. EDWARDS.

4, Portland Place, North Clapton, London, 2nd Aug., 1872.

ASSISTANTS' SALARIES,

(TO THE EDITOR OF THE "CHEMIST AND DRUGGIST.")

DEAR SIR,—I think it is high time that we chemists' assistants were looking out for an increase of salary. It is an undeniable fact that we have hitherto been, and at the present time are, the most miserably paid beings under the sun. Common labourers can earn more money in fifty-four hours than we do in seventy; besides, with us it is necessary to expend about one-third of our income in dress done, in order to make ourselves presentable behind the counter. Mercantile clerks who, to say the very least, ought not to be considered our superiors, have a clear

coast before them; that is to say, they can commence business on their own account when and wherever they choose, without, as is the case with us, having to undergo two or three severe and costly examinations. Their salaries average at least one-half more than ours, and in many cases they get more than double the amount which the best of us receive, notwithstanding the fact that their business hours are fully one-third less than ours.

Considering the obstacles which it is now absolutely necessary for an assistant in our business to surmount, ere he can become his own master, and also the increased value of labour, I am of opinion that an advancement of 50 per cent. on our present wages would not make our services inadequate to the remuneration.—I am, dear Sir, yours truly,

AN ASSISTANT.



MEL BORACIS.—A registered chemist and druggist can only become a *Pharmaceutical Chemist* by passing all the examinations, preliminary, minor, and major. He may, however, become a member of the *Pharmaceutical Society* with much less trouble. On application to the Council he will probably be elected, and will then have to pay two guineas entrance fee, and one guinea annual subscription.

Mr. A. Parrie.—The compound liquorice powder is composed of the following constituents, so prepared as to form when incorporated an almost impalpable powder: Senna leaves, 3vj; liquorice root, 3vj; fennel seeds, 3ij; sulphur, 3ij; refined sugar, 3xvii. It is said to be a mild but efficient laxative, and has lately been strongly recommended for this purpose in the *Practitioner* by Mr. David Page, of Edinburgh. The usual dose is a small teaspoonful at bed-time, in water, with which it is easily mixable, forming an agreeable draught. Children, to whom Gregory's powder is a terror, readily take it with a belief that it is a sweetmeat.

Mr. J. Hargreave (Ballarat). Please accept our thanks for your courteous attention.

Lancet.—Having passed at the College of Preceptors, you can join the Pharmaceutical Society as an "apprentice or student," when you like. You must take this position before you can enter for the "minor," but as soon as you enter you will be required to pay the subscription.

S. W.—Only a registered chemist and druggist would have a legal right to sell the original *Pharaoh's Serpents' Eggs*, made of sulpho-cyanide of mercury. According to the Pharmacy Act, too, it would be requisite for him to register the sale; because "all metallic cyanides" are poisons included in the first part of the schedule. Anybody might make and sell the non-poisonous imitations, for which we published a formula in our June number.

SYRUP OF LACTO-PHOSPHATE OF LIME.—A correspondent asked lately for a formula for syrup of lacto-phosphate of lime. We have obtained the following:—

R̄	Concentrated lactic acid	1 fl. ounce.
	Magma of freshly precipitated phosphato of lime, as much as will dissolve.		
	Orange flower water	1½ ounces
	Water up to	8 "
	White sugar	11 "

Mix the lactic acid with two ounces of water, and saturate it with the magma. Put the liquid upon a filter and add the rest of the water until eight fluid ounces of filtrate are obtained. Pour this upon the sugar contained in a bottle; shake occasionally, until solution is effected, and strain. No heat ought to be applied, else the syrup assumes a milky appearance. The syrup thus prepared contains between two and three grains of dry phosphate of lime in each fluid drachm, besides the lactic acid. Dr. R. Blacke calls attention, in *The Practitioner* for February, 1872, to the use of the salt in adynamic fevers and in convalescence. The want of success which has generally attended the employment of the phosphates he attributes to the fact that they are given in such quantities that there is not enough lactic acid in the gastric juice to dissolve them. He therefore recommends the administration of lacto-phosphate of lime, which he says is at once an aliment and an article of food, and a medium of the highest value. It is, moreover, soluble in the secretions of the stomach, and is readily absorbable.

Exelsior.—LIQUR ACIDA HALLERI is the *mistura sulphurica acida* of the *Prussian Pharmacopœia*. It is made by adding gradually one part of pure sulphuric acid to three parts of rectified spirit. How to perfume an antiquarian's shop is a curious inquiry to put to us without telling us first what the shop contains.

X. (Portsmouth).—GLUTEN CAPSULES are manufactured by Newbery. They are made, we believe, by first freezing the balsam, and then covering it in its solid form with gluten.

Messrs. Parkinson and Sons (Burnley). DISTILLATION.—We are not acquainted with any hook especially describing the distilling of essential oils and fruit essences. The information is scattered about among works on perfumery, and perhaps one of our practical readers will be good enough to advise you.

Mr. Ashworth, (Brierfield). LIQUOR AMMON. ACET. should be made fresh. It is impossible to prevent entirely the natural result of the evaporation of the ammonia, and the consequently acid character of the solution.

Mr. T. Rickard.—“Copland's Dictionary of Practical Medicine,” published by Longmans at 36s., is perhaps the most modern. “Becton's Medical Dictionary,” at 1s., is a useful little work.

Science and Art) Newcastle).—Mr. Schacht has always professed to base his scheme of pharmaceutical education on a system similar to that adopted by the Science and Art Department of the Committee of Council on Education.

Mr. Williams, of 137, Cannon-street, London, writes to us in reference to the action of Breton v. Williams reported on another page. He wishes to explain that the bottle of “Breton's Corn Solvent” which he sold was one of a few included in Mr. Breton's stock which he (Mr. Williams) bought in October last, and further, that he sold the bottle in exactly the condition in which he purchased it, with the exception of having affixed the Government stamp to it. This, Mr. Williams says, was stated by his solicitor, but Sir R. W. Carden decided that, if proved, the sale was illegal, and therefore that evidence was inadmissible.

Petium.—The following preparation will be found useful as a sachet perfume:—

Patchouli leaves, 8 oz.
Lavender flowers (lightly dried), 3 oz.
Orris root, 2 oz.
Cloves, 1 oz.
Essence bergamot, 1 drachm.
Essences of ambergris and musk, each $\frac{1}{2}$ drachm.

The dry ingredients are to be separately reduced to powder, the scent then added, and the whole finally passed through a fine sieve to ensure perfect admixture.

For a cheap scent this may answer:—

Orris root, in coarse powder, $\frac{1}{2}$ lb.
Rectified spirit, 1 pint. Exhaust by percolation, and add—

A few drops of essential oils, as bergamot, cloves, or otto of roses. Might be vended as “Spirit of Violets.”

Chemists.—Gingerine is a speciality of Messrs. T. and H. Smith's, of Edinburgh, and we are unable to give its mode of preparation. For Ginger Beer Powders *sine Pulv.* Zingib. we would suggest the following:—

Bicarbonate soda, 11 drachms.
Refined sugar, 20 drachms.
Essence lemon, 6 drops.
Stronger essence ginger (B.P.), 1 drachm.

Mix, and divide into twelve powders. The other powders to contain $\frac{1}{2}$ drachm of tartaric acid in each.

A. B. G. will feel indebted to some brother pharmacist for the formula of “Barrick Sargeant's Drops,” which he states, are not a patent medicine.

The tables for using Bates' Saccharometer, are published by Simpkin and Marshall, of Stationers'-hall-court, E.C. Price we believe is 3s. 6d.

Inquirer (Pontefract).—Rowland's Macassar Oil, whose legitimate source should be the far East, is stated to be composed as follows:—

Oil of almonds (reddened by alkaneet root), 1 pint.
,, rosemary, 1 drachm.
,, origanum (white), 1 drachm.
,, nutmeg,
Otto roses, of each 15 drops.
Neroli, 6 drops.
Essence of musk, 3 or 4 drops.

Varia.

PRIMITIVE MEDICAL PRACTICE.

A GENTLEMAN in Alabama, in exerting himself one day, felt a sudden pain, and fearing his internal machinery had been thrown out of gear, sent for a negro on his plantation, who made some pretensions to medical skill, to prescribe for him. The negro, having investigated the case, prepared and administered a dose to his patient with the utmost confidence of a speedy cure. No relief being experienced, however, the gentleman sent for a physician, who, on arriving, inquired of the nigger what medicine he had given his master. Bob promptly responded: “Rosin and alum, sir.” “What did you give them for?” continued the doctor. “Why,” replied Bob, “de allum to draw de parts togedder, and de rosin to sodder um.” The patient eventually recovered.

The *New York Independent* says: “A Darwinian has applied to the bishops to be appointed as a member of the committee for revising the translation of the Scriptures. He sent in the following version of a couple of verses from the Psalms, as a specimen of his powers:—My protoplasm was not hidden from Thee when, far back in the Silurian epoch, I floated on the sea, a frilled and flounced Medusa. Yea, in ages still more remote, before differentiation had begun, Thine eyes did see my sarcode, and in Thy thought my limbs took form before they were evolved.”

MEDICAL BARONETS.

Another medical baronet is promised to us, or rather to Ireland. Since a similar honour was conferred on Dr. Christison, the representative of Scotland, the Irish medical profession has kept up a regular low rumbling, which is to be quieted at last by the conference of a baronetcy on Dr. William Stokes, Regius Professor of Physic, in Trinity College, Dublin. Dr. Stokes is a physician of high repute, and doubtless has well-earned the magical three letters which are to be attached to his name. In connection with this, it may be interesting to quote a list of medical baronets, which the *Lancet* published recently. The list includes only those physicians and surgeons who were created baronets as a professional reward:—Edward Greaves, M.D., 1645; Hans Sloane, M.D., 1716; Thomas Molyneux, M.D., 1730; Edward Hulse, M.D., 1738; Edward Wilmot, M.D., 1759; William Duncan, M.D., 1764; John Pringle, M.D. 1766; Edward Barry, M.D., 1775; Clifton Wintringham, M.D., 1776; George Baker, M.D., 1776; Cæsar Hawkins, 1778; Lucas Pepys, M.D., 1786; Walter Farquhar, M.D., 1796; John Hayes, M.D., 1797; Francis Milman, M.D., 1800; Henry Halford, M.D., 1809; Gilbert Blane, M.D., 1812; William Knighton, M.D., 1813; Edward Home, 1813; James Wylie, M.D., 1813; Wathen Waller, 1814; David Dundas, 1815; Matthew Tierney, M.D., 1813; Astley Cooper, 1821; Patrick Macgregor, 1828; James MacGrigor, 1831; Charles Clarke, M.D., 1831; William Russell, M.D., 1832; Stephen Hamnick, 1834; Benjamin Brodie, 1834; James Clark, M.D., 1837; Henry Marsh, M.D., 1839; Philip Crampton, 1839; Henry Holland, M.D., 1853; Charles Locock, M.D., 1857; Thomas Watson, M.D., 1866; William Fergusson, 1866; James Simpson, M.D., 1866; Dominic Corrigan, M.D., 1866; William Lawrence, 1867; William Jenner, M.D. 1868; James Paget, 1871; Robert Christison, M.D. 1871; William Gull, M.D., 1872; The total being 31 physicians, and 13 surgeons. Sir A. Douglas, Sir A. Bannerman, Sir Henry Northcote, Sir George Hampson, Sir James Stonehouse, Sir William Dundas, Sir Richard Croft, and Sir G. Duncan Gibb, all succeeded to family baronetcies whilst practising medicine. Sir George Taunton, Sir Robert Wigram, Sir J. Hutton Cooper, Sir J. Kay Shuttleworth, and Sir Charles Nicholson, practised medicine for a time, but were created baronets for services unconnected with the medical profession.

Exchange Column.

REVISED TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the publisher of the CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to “The Publisher of the CHEMIST AND DRUGGIST, Colonial Buildings, Cannon-street, London, E.C.,” the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

Surplus 24-Pill Machine, four grains; brass runners; 9s. 6d. Hay, Chemist, Regent's-terrace, Hull.

Two Second-hand Printing Presses. Very cheap. Wyles, Bourn.

A quantity of Tincture of Cantharides, warranted B.P. Offers wanted. Samuel Cookson, Salford.

About 2 dozen 1s. and 1 dozen 2s. De Vere's Gold Paint; the lot 16s., or exchange. Heathcote, Chemist, Winstar.

Lyne Hancock's Registered Air Chair-Bed Cushion, new. Half price, or exchange. Cheverton, Tunbridge-wells.

Offers wanted for *Pharmaceutical Journal*, July, 1868, to June, 1872, unbound. R. Post-office, Northampton.

Six Winchester Quarts Ol. Caryoph. (English). Offers wanted, Binnie, Chemist, Falkirk, Scotland.

Patent Medicines, Lamps, Sundry Articles for 4 gr. Pill Machine, Carrington, Wineanton.

Two and a-half lbs. Extract Belladon. Alcohol. (fresh and pure). 30s. 24/506.

Gabriel's preparations for Teeth, and Rowe's Bath for Seab. Offers wanted. 25/506.

A lot of Gold-labelled Bottles, Globes, Jars, etc., for sale, cheap. Mr. Field, Whitmore Reans, Wolverhampton.

A second-hand Printing Press, with Type and all requisites. A bargain. B. W., Stamp Office, Bourn.

Noad's "Analysis" New Qualitative and Quantitative, 10s. X.Y.Z., Glen-Vue Works, East Grinstead.

Twelve Gallons very good Mushroom Ketchup. Season 1871. Portbury, Devizes.

Five Hundred dozen (or less) Indian Vegetable Flesh Rubbers, at 2s. 6d. per dozen. Apply to G. Dowman, Chemist, Southampton.

Binoocular Microscope, first-class, with Polariseope, quite new, in handsome polished mahogany cabinet, only £10 10s. Apply, B., 151, Hoxton-street, London.

On sale or exchange, a Black and White Marble Table, in good condition. For particulars apply to R. Crozier, Chemist, Lytham.

Ten sets of 8 Forceps, in leather pouch of very good quality, 25s. the set, cost 50s. being a bankrupt's stock. Address, J. C., 14, Netherthorpe-street, Sheffield.

Three Photographie Printing Frames, two Porcelain Dishes, 10-in. by 8-in. Lot cost 7s. Half-price, Stead, Chemist, Heckmondwike.

Quantity of Goulding's Patent Food, Marking Ink—various patents, and Berri Printing Press, cheap, or for exchange. B. Wyles, Bourn.

British Medical Journal, 10 vols., roughly stitched; Graham's "Chemical Reports;" Lehmann's "Physiological Chemistry," 1 vol., 14s. 31/506.

Cassell's "Popular Educator;" Orogan's "English Cæsar;" Hamilton's "Interlineal Translation of Cæsar;" Ditto "Celsus." Cheap; or exchanged for "Bentley" or "Attfield." J. N., 24, King-street, Reading.

Plate Glass Electrifying Machine, 18 inches; handsomely mounted in mahogany, enclosed in painted case. Price £4 4s., or exchange. Taylor, Chemist, 81, High-street, Peckham.

Ten 2-gallon Show Carboys, pear-shaped, cut stoppers, 40s. cash. Lescher's "Elements," (clean) 3s. 6d. Tin Still, complete, with Liebig's Condenser, offers wanted. Lindsey, Chemist, Roehdale.

To be Sold Cheap. A full-plate Lens and Bellows-bodied Camera; also, a Cabinet Size Lens and Bellows-bodied Camera, complete; new. A. Ramsbottom, 50, Coupland-street, Manchester.

Barnett's No. 4 Soda Water Machine, Bottling Machine, 6 Syrup Ice Cream Soda Apparatus, Three 5-gallon Cylinders, Bottles, etc. Cash offers wanted, part or whole. 41/506.

Bunter's Nervine; Baxter's Lung Preserver; Lalor's Phosphodyne; and the Queen's Wild Cherry Cough Balsam; Rait's Renal Balsamic Pills and Gout and Rheumatic Pills; Powell's Rheumatic Embrocation. For cash or exchange. Wrappers perfectly clean. Address, F. L. T., Post-office, Rothwell, Northamptonshire.

For 30 stamps will be sent an original and infallible prescription, together with full instructions for curing spermatorrhœa. Every case treated has recovered quickly. The remedies are uncommon and different from the usual medicines employed in these cases. "M.R.C.S.," Mr. Barry, 18, Tonsley-road, Wandsworth, S.W.

Invaluable to every Chemist.—New and Antiseptic Prescriptions for gonorrhœa, gleet, and chordee. Will ensure rapid, successful, and permanent cures in the most obstinate cases. Free, with full instructions, for 49 stamps, "M.R.C.S.," Mr. Barry, 18, Tonsley-road, Wandsworth, S.W.

200 Honeycomb and Turkey Sponges, £2 5s.; 110 Fancy Boxes for Gloves, Hair-pins, and Sweets, £1; 3 dozen Bon-bon Crackers, 5s.; Counter Scales, Fig. 1, Maw, without Drawer, 10s.; a Fountain, 8s.; 6 ls. and 10 6d. Magic Perfumes, 4s.; 9 Herbert's Glue, 2s.; Clark's Pyramid Lamp, 2s.; 1 ewt. Syr. Ferri. Phosph. Co. (Parish), 1s. 4d. per lb. Day, Chemist, Beckenham.

To be sold cheap. Chemists' Mahogany Fixtures—consisting of Counter, Dispensing Counter (with Screen and Glass Cases in front), Counter Desk with ditto Long Drawers, 18 ft. by 2½ ft. deep, Lockers, Shelving, Cornice, Wall Cases, Window Enclosure, Specie Jar, and 2 Carboys, Bottles on Shelves, etc. Offers wanted. Address, "Aliquis," Messrs. Southall, Son, and Dymond, Birmingham.

WANTED.

A 24-Pill Machine; also Tincture Press. 37/506.

Cabinet of Materia Medica. Good, and complete. 16/506.

A Nest of Label Drawers. W. A. Wood, Hunslet.

Iron Mortar and Pestle; six to eight pints. 15/506.

Pharmaceutical Journal, for February, 1865. E., 5, Fore-street, Taunton.

Garrod's "Materia Medica," latest. State price. "Homo," 19, Elswick-row, Newcastle.

Attfield's "Chemistry." State lowest price, latest edition. Sutton, Chemist, Gosport.

Several Perculators; York Glass Displacement Apparatus, any size. Cheap. Cheverton, Tunbridge Wells.

Anyone having a 3-pint Seltzogene, minus the tap and glass tube, may hear of a purchaser by writing to Stainthorpe, Corbridge-on-Tyne.



SINCE we last reported, perhaps the most gigantic financial venture yet attempted has met with a success altogether without precedent. That a country situated as France is, only just recovering from the shock of conquest, with a Government of a provisional character, presided over by a man far advanced in years, and whose removal might be followed by renewed revolution, that such a country should inspire the financial world with unbounded confidence, seems indeed a marvel. The results of the loan are astounding. The amount asked for was £120,000,000, but more than twelve times that vast sum was placed at the disposal of the French Government, and Germany evinced an equal desire, with other countries, to acquire the securities of its late adversary. Altogether the magnitude of the actual operation is completely dwarfed by the magnificence of its success.

The enhanced cost of labour and materials is making itself felt in all directions, and last month reference was made to the demands of dock employes, a strike among whom was only obviated by conceding their requirements. As a natural sequence, the companies are forced to recoup themselves, and imported merchandise, drugs included, are saddled with accelerated charges. A circular to this effect has been issued by the dock and wharf companies, "That in consequence

of the very great increase in the cost of labour and materials, they have found it necessary to raise the rates and charges on merchandise 25 per cent."

There has been a marked flatness in the market throughout the month, and speculation, except in a few articles, has been limited.

ALOES.—Barbadoes have met a fair inquiry, and last month 331 packages, being all offered, sold, since when the demand has somewhat slackened. Cape experienced a rise of about 3s. per cwt. at sales on the 1st inst., but this is in great measure attributable to the small parcel (42 cases) then on offer.

BARKS.—Cinchonas: Plentiful supplies have met but a moderate demand; good qualities of Yellow, however, have been fetching rather better prices. 8 bales of Cundurango at last sales were bought in at 1d. per lb., and this "wonderful remedy" may now be considered to have received its final quietus. CINNAMON is still selling fairly, and sustains former value. Ceylon reports indicate accelerated business in the article there; deliveries are being actively pushed forward on a larger scale, but growers are said to be neglecting the collection of chips, being fully engaged in preparing bale quality for market.

CAMPHOR.—Further arrivals have come to hand by the *Antenor* and *Hector*, amounting to 2,200 packages. Business has been restricted, and at the moment there is but little doing. At sales on the 1st 51 cases grey China sold at 77s. 6d. to 78s. 6d.; and 45 cases China refined, somewhat discoloured, at 10d. Copaiba Balsam is easier, and 9 casks of '69 bright Para on offer sold at 1s. 11d. Cardamoms, in spite of sustained demand, have suffered further retrogression, and we are advised there is some stock in speculative hands which tends to make future movements obscure. Guinea Grains are quite 10s. per cwt. cheaper, and Nux Vomica in steady request for large beans. Opium is firm, at a slight advance, but transactions are not very heavy. Musk: Holders have made a trifling concession, as they were well able to do, prices having ruled high for some time past. An innovation in connection with this article calls for comment. Hitherto it has been usual to allow Musk to remain on show in the warehouses until the morning of sale, but this arrangement seems to have been superseded, and at drug auctions, on the 1st, complaints were pretty general in consequence. Brokers having an especial interest in the article alone acquiesce in a course which leaves the field more open for their purchases, for other parties who are unable to view except on the morning of sale cannot be expected to put in a bidding quite on "spec" as to quality. It was stated that Musk was roughly handled, inasmuch that in one case there was a loss of 22 oz. on 23 caddies, and this was urged in excuse of its premature removal. Probably in the instance cited dampness was as much the cause of loss as anything. However, it is certain that the new arrangement, if persisted in, will entail much inconvenience, and it should be abandoned. As was cogently urged by one gentleman, the small buyers, who only require a single caddy or so, collectively maintain the active competition, and it appears to us are entitled to equal facilities for purchasing as the "leviathans."

ESSENTIAL OILS.—Aniseed has latterly been very sensitive, and there is some doubt as to the real value. Stocks are very large, being 625 cases against 78 last year. This accumulation is the result of holding speculation which has caused undue inflation of the article for months past. Holders are now pushing on the market, and there is considerable depreciation in value. The last week in July, 95 cases were sold at 8s. 3d. to 9s., closing at 8s. 3d. cash, and for forward delivery 90 cases at 9s. to 9s. 6d. On the 1st inst. 83 cases were put forward at auction amidst much excitement and clamour, it being freely banded about that there was no real intention to "let go," and that, in fact, the affair was only meant to bolster up the value. Although the selling broker indignantly disclaimed imputations on the *bona fides* of the sale the room remained unconvinced. There was a marked absence of bidding, and the parcel, there is small room to doubt, reverted to original hands, at prices above the value. The whole transaction appeared sufficiently transparent, but the strongly-expressed "virtuous indignation" of some parties seemed a little out of place, and forcibly suggested a well-known adage. Present nominal value of the oil is 9s. 3d., but a considerable sale to-day will further expose the real position. Cassia is rather dearer and

small sales have been made at 6s. 3d. Citronelle not quite so lively. Lemon and Bergamot.—Stocks remaining at Messina are of an inferior quality, and this may account for neglected inquiry there. The new lemon crop is reported a failure, and should this be confirmed present high prices will suffer considerable augmentation.

GUMS.—Supplies of Olibanum, Animi, Damar and Copal have been rather heavy, and have depressed respective values. Benjamin still in good demand. Sumatra being especially active. Guaiacum slightly easier. Of 253 small boxes offered at auction on the 1st 104 sold, fine drop partly run at 2s. 8d., fair to very good 2s. 3d. to 2s. 7d.

ROOTS.—Ipecacuanha has been selling at a decline, and Orris, Seneka, and Pellitory have somewhat receded. 3 bales of Sumbul, which is scarce, were bought in on the 1st at 2s. 6d. per lb.

DRYSALTERIES.—China Galls have experienced less attention and have declined.

COCHINEAL.—At sales on the 6th a rather large supply was offered, and a large proportion was disposed of on easier terms. The demand for Shellac shows little activity, and prices are again down. The stock is very large, and up to July 31st was 11,320 chests, being about 3,000 chests more than same time last year. Safflower continues difficult of sale, and a comparison of landings and deliveries up to July 31st with those of last year indicate that the new aniline colour has seriously interfered with the consumption of this dye. In the seven months of 1871 the landings amounted to 1,316 bales, and the deliveries to 2,302 bales, whilst this year the landings have been 1,105 bales, and the deliveries 1,745 bales. Stock, July 31st, 2,688 bales against 1,791 last year.

SPICES.—WHITE PEPPER.—Unusual excitement prevailed in the market on the 17th July, and considerable fluctuations in prices occurred. At auction 650 bags Singapore were all sold, commencing at 1s. 2½d. to 1s. 2¼d., and rising gradually to 1s. 3½d., when a brisk competition caused a very rapid advance, and the last few lots brought 1s. 8d. Prices have since receded to a normal point. **POD PEPPER.**—Owing to the late destruction at Zanzibar whatever has been offered has been eagerly taken at an advance of about 10s. per cwt. At fortnightly sales of Jamaica Ginger on the 29th ult., the supply consisted mostly of common qualities, which fetched about previous rates. Supply of Cochin is still in excess of demand. Auctions have gone off tamely. Mace and Nutmegs are slightly cheaper.

CHEMICALS.—The American demand has been falling off somewhat, stocks having accumulated at New York and other centres. The new Tariff Bill is favourable, and must increase business between the two countries eventually.

From the Board of Trade Returns it appears that the value of our exports of chemical products and preparations, exclusive of alkali, for the last seven months was £1,044,364 against £839,149 last year. This increase is eminently satisfactory.

ACIDS.—Citric has been in good demand and with prospects of short supply of Lemon Juice has advanced to 4s. 2d. Tartaric quiet, and Oxalic fairly inquired for at former rates. Bleaching Powder stiffer, and Sulphate of Ammonia appreciably advanced. Cream of Tartar now offers at 105s., but business has been somewhat limited at this figure. British Quinine is about 2d. per ounce cheaper, but Pelletier's supports former value. Bicarbonate of Soda has continued to rule high, and this may explain the appearance of the article at auction on the 1st inst., when 69 casks of the two best brands, Howard's and Chance's, were sold, the former at 40s., the latter at 17s. to 17s. 3d. Mercurials are again quoted higher all round and the metal stands firm at £13 10s.

OILS.—Olive is only saleable in quantity at lower prices. Palm in good demand, and firm at £39 for fine Lagos. Linseed worth more money, but Coconut has commanded but little attention. The demand for common Fish Oils is limited. Supplies of new Seal are now on the market at a considerable reduction. Turpentine has receded to 35s. for American Spirits. Deliveries last month were over 6,000 barrels, or about the largest ever known. Petroleum is decidedly firmer, and future prospects are favourable, as supplies of Coal Oil will be limited owing to the high price of coals and enhanced cost of labour. A considerable fire has occurred at the petroleum works at Hunter's Point, New York, but the number of barrels destroyed is not yet known.

Monthly Price Current.

[The prices quoted in the following list are those actually obtained in Mining-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

CHEMICALS.

		1872.		1871.	
ACIDS—		s. d.	s. d.	s. d.	s. d.
Acetic	per lb.	0 4½	to 0 0	0 4	to 0 0
Citric	per lb.	4 2	.. 4 3	2 10	.. 2 0
Hydrochlor.	per cwt	4 0	.. 7 0	4 0	.. 7 0
Nitric	per lb.	0 5	.. 0 5½	0 5	.. 0 5½
Oxalic	per lb.	1 0½	.. 1 0½	0 11	.. 0 0
Sulphuric	per lb.	0 0½	.. 0 1	0 0½	.. 0 1
Tartaric crystal ..	per lb.	1 6½	.. 0 0	1 3½	.. 0 0
powdered	per lb.	1 7	.. 0 0	1 3½	.. 1 3½
ANTIMONY ore.....	per ton	270 0	.. 290 0	240 0	.. 260 0
crude	per cwt	38 0	.. 40 0	36 0	.. 38 0
regulus.....	per cwt	0 0	.. 0 0	40 0	.. 47 0
star	per cwt	72 0	.. 75 0	48 0	.. 49 0
ARSENIC, lump.....	per cwt	18 6	.. 0 0	15 6	.. 16 0
powder.....	per cwt	7 9	.. 8 0	6 9	.. 7 3
BRIMSTONE, rough ..	per ton	140 0	.. 145 0	160 0	.. 0 0
roll	per cwt	9 9	.. 10 0	10 0	.. 10 6
flour.....	per cwt	12 6	.. 0 0	12 0	.. 13 0
Iodine, dry	per oz.	1 11	.. 2 1	1 4	.. 0 0
IVORY BLACK, dry.....	per cwt.	8 6	.. 0 0	0 0	.. 0 0
MAGNESIA, calcined..	per lb.	1 2	.. 1 3	1 2	.. 0 0
MERCURY.....	per bottle	270 0	.. 0 0	180 0	.. 190 0
MINIUM, red	per cwt.	21 3	.. 21 6	20 6	.. 21 0
orange	per cwt.	31 6	.. 32 0	31 6	.. 32 0
PRECIPITATE, red	per lb.	4 2	.. 0 0	3 2	.. 0 0
white	per lb.	4 2	.. 0 0	3 1	.. 0 0
PRUSSIAN BLUE	per lb.	0 0	.. 0 0	0 0	.. 0 0
SALTS—					
Alum	per ton	155 0	.. 160 0	135 0	.. 140 0
powder	per ton	175 0	.. 180 0	145 0	.. 150 0
Ammonia:					
Carbonate	per lb.	0	.. 0 7½	0 6½	.. 0 6½
Hydrochlorate, crude,	per ton	640 0	.. 0 0	460 0	.. 560 0
white.....	per ton	640 0	.. 0 0	460 0	.. 560 0
British (see Sal Ammoniac)	per ton	420 0	.. 430 0	400 0	.. 420 0
Sulphate	per cwt	65 0	.. 90 0	60 0	.. 90 0
Argol, Cape	per cwt	0 0	.. 0 0	0 0	.. 0 0
France	per cwt	24 0	.. 27 0	22 0	.. 24 0
Oporto, red	per cwt	0 0	.. 0 0	0 0	.. 0 0
Sicily	per cwt	0 0	.. 0 0	0 0	.. 0 0
Naples, white	per cwt	0 0	.. 0 0	0 0	.. 0 0
Florence, white	per cwt	0 0	.. 0 0	0 0	.. 0 0
red	per cwt	0 0	.. 0 0	0 0	.. 0 0
Ashes (see Potash and Soda)	per cwt.	14 0	.. 14 6	13 9	.. 14 0
Bleaching powd.	per cwt.	60 0	.. 75 0	45 0	.. 60 0
Borax, crude	per cwt.	47 0	.. 65 0	45 0	.. 60 0
(Tincal)	per cwt.	100 0	.. 0 0	80 0	.. 0 0
British refnd.	per lb.	3 10	.. 0 0	3 0	.. 0 0
Calomel	per lb.	3 10	.. 0 0	3 0	.. 0 0
Copper:					
Sulphate	per cwt.	34 0	.. 34 6	24 6	.. 25 0
Copperas, green	per ton	60 0	.. 62 6	50 0	.. 60 0
Corrosive Sublimate..	p. lb.	3 3	.. 0 0	2 4	.. 0 0
Cr. Tartar, French, p.	cwt.	105 0	.. 0 0	93 6	.. 95 0
Venetian grey	per lb.	100 0	.. 0 0	95 0	.. 0 0
brown	per lb.	90 0	.. 100 0	77 6	.. 85 0
Epsom Salts	per cwt.	5 9	.. 6 3	6 0	.. 7 0
Glauber Salts	per cwt.	5 0	.. 6 0	4 6	.. 6 0
Lime:					
Acetate, white, per cwt.	per cwt.	14 0	.. 22 6	12 6	.. 23 0
Magnesia: Carbonate ..	per lb.	42 6	.. 45 0	42 6	.. 0 0
Potash:					
Bichromate	per lb.	0 8	.. 0 0	0 9	.. 0 0
Carbonate:					
Potashes, Canada, 1st	sort	37 6	.. 38 0	36 0	.. 0 0
Pearlashes, Canada, 1st	sort	58 0	.. 0 0	48 0	.. 0 0
Chlorate	per lb.	1 6	.. 1 6½	1 5	.. 1 5½
Prussiate	per lb.	1 6	.. 1 6	1 6	.. 0 0
red	per lb.	3 1	.. 0 0	2 2½	.. 2 5
Tartrate (see Argol and Cream of Tartar)					
Potassium:					
Chloride	per cwt.	0 9	.. 10 0	10 6	.. 11 0
Iodide	per lb.	33 0	.. 0 0	22 0	.. 0 0
Quinine:					
Sulphate, British, in	bottles	7 7	.. 0 0	7 2	.. 0 0
Sulphate, French	per lb.	7 6	.. 0 0	6 10	.. 0 0
Sal Acetos	per lb.	1 4	.. 0 0	1 1½	.. 0 0
Sal Ammoniac, Brit. cwt.	per cwt.	48 0	.. 49 0	41 0	.. 42 0
Saltpetre:					
Bongal, 6 per cent or	under	28 3	.. 29 0	20 0	.. 29 6
Bongal, over per cent.	per cwt.	27 0	.. 28 0	27 0	.. 28 6
Madras	per cwt.	0 0	.. 0 0	0 0	.. 0 0
Bomb & Kurracheep, et.	per cwt.	0 0	.. 0 0	0 0	.. 0 0
European	per cwt.	0 0	.. 0 0	0 0	.. 0 0
British, refined	per cwt.	31 0	.. 32 3	32 0	.. 32 6
Soda: Bicarbonate, p.cwt.	per cwt.	17 6	.. 18 0	14 0	.. 0 0
Carbonate:					
Soda Ash	per deg.	0 3	.. 0 0	0 2½	.. 0 2½
Soda Crystals per ton	per ton	152 6	.. 155 0	115 0	.. 117 6
Hyposulphite	per cwt	16 0	.. 17 6	16 0	.. 0 0

		1872.		1871.	
Soda:		s. d.	s. d.	s. d.	s. d.
Nitrate	per cwt.	14 0	to 15 0	15 3	to 15 6
SUGAR OF LEAD, White, cwt.	per cwt.	45 0	.. 0 0	39 0	.. 40 0
Brown	per cwt.	30 0	.. 0 0	26 0	.. 28 0
SULPHUR (see Brimstone)					
VERDIUS	per b.	1 1	.. 1 3	1 0	.. 1 2
VERMILION, English..	per lb.	3 10	.. 0 0	3 4	.. 0 0
China.....	per lb.	4 0	.. 4 2	3 4	.. 0 0
DRUGS.					
ALGÆ, Hepatic.....	per cwt.	100 0	.. 240 0	70 0	.. 220 0
Socotrine	per cwt.	160 0	.. 460 0	120 0	.. 230 0
Cipe, good.....	per cwt.	28 0	.. 30 0	27 0	.. 29 0
Inferior	per cwt.	22 0	.. 27 0	20 0	.. 26 0
Barbadoes	per cwt.	75 0	.. 200 0	70 0	.. 210 0
AMBERGRIS, grey.....	oz.	24 0	.. 27 0	25 0	.. 30 0
BALSAM—					
Canada	per lb.	1 6	.. 0 0	0 10	.. 0 11
Capivi	per lb.	1 11	.. 2 1	1 9	.. 1 11
Peru	per lb.	9 6	.. 0 0	9 3	.. 9 6
Tolu	per lb.	1 9	.. 1 10	1 9	.. 1 11
BARKS—					
Canella alba	per cwt.	15 0	.. 25 0	15 0	.. 25 0
Casearilla.....	per cwt.	26 0	.. 37 0	20 0	.. 37 0
Peru, crown & grey per lb.	per lb.	1 6	.. 3 0	1 3	.. 2 10
Calisaya, flat	per lb.	3 4	.. 4 0	3 2	.. 3 4
quill	per lb.	3 6	.. 4 2	3 2	.. 3 4
Carthagea	per lb.	0 10	.. 2 0	0 10	.. 1 10
Pitayo	per lb.	0 7	.. 1 9	0 10	.. 1 6
Red	per lb.	1 10	.. 6 0	2 0	.. 7 3
Bucha Leaves	per lb.	0 3½	.. 1 0	0 4	.. 1 0
CAMPHOR, China..	per cwt.	78 0	.. 79 0	70 0	.. 72 6
Japan	per cwt.	80 0	.. 0 0	77 6	.. 80 0
Refin Eng. per lb.	per lb.	1 3½	.. 1 4	1 3	.. 0 0
CANTHARIDES	per lb.	5 2	.. 5 3	4 8	.. 0 0
CHAMOMILE FLOWERS p. cwt	per cwt.	45 0	.. 70 0	40 0	.. 60 0
CASTOREUM	per lb.	3 0	.. 30 0	3 0	.. 30 0
DRAGON'S BLOOD, lp. p. cwt.	per cwt.	110 0	.. 220 0	100 0	.. 230 0
FRUITS AND SEEDS (see also Seeds and Spices)					
Anise, China Star pr cwt.	per cwt.	105 0	.. 110 0	125 0	.. 0 0
German, &c.	per cwt.	25 0	.. 35 0	41 0	.. 47 0
Beans, Tonquin ..	per lb.	1 0	.. 1 8	0 9	.. 1 6
Cardamoms, Malabar					
good	per lb.	6 0	.. 7 0	7 6	.. 9 0
inferior	per lb.	5 0	.. 5 9	5 6	.. 7 0
Madras	per lb.	2 6	.. 6 0	3 6	.. 8 0
Ceylon	per lb.	4 0	.. 4 3	2 10	.. 3 2
Cassia Fistula..	per cwt.	10 0	.. 20 0	12 0	.. 30 0
Castor Seeds	per cwt.	10 0	.. 12 0	10 0	.. 12 0
Cocculus Indicus ..	per cwt.	14 6	.. 16 0	18 6	.. 20 0
Colocynth, apple..	per lb.	0 3	.. 0 6	0 3	.. 0 6
Croton Seeds ..	per cwt.	55 0	.. 59 0	70 0	.. 75 0
Cubebs	per cwt.	25 0	.. 26 0	25 0	.. 28 0
Cummin	per cwt.	25 0	.. 32 0	48 0	.. 55 0
Dividivi	per cwt.	12 0	.. 15 0	12 0	.. 14 6
Fenugreek.....	per cwt.	12 0	.. 22 0	17 0	.. 25 0
Guinea Grains ..	per cwt.	40 0	.. 0 0	23 0	.. 24 0
Juniper Berries ..	per cwt.	11 6	.. 12 0	15 0	.. 15 6
Myrobalans	per cwt.	10 6	.. 15 0	12 0	.. 17 6
Nux Vomica.....	per cwt.	11 0	.. 16 0	11 0	.. 17 6
Tamarinds, East India	per cwt.	3 0	.. 16 0	2 0	.. 12 0
West India, new ..	per cwt.	25 0	.. 36 0	10 0	.. 27 6
Vanilla, large....	per lb.	45 0	.. 55 0	27 0	.. 37 6
inferior	per lb.	27 0	.. 43 0	10 0	.. 25 0
Wormseed	per cwt.	0 6	.. 0 0	0 0	.. 0 0
GINGER, Preserved, in bond	(duty 1d. per lb.) per lb.	0 6½	.. 0 10½	0 6	.. 0 10
GUMS (see separate list)					
HONEY, Chili.....	per cwt.	32 0	.. 48 0	40 0	.. 60 0
Cuba	per cwt.	35 0	.. 50 0	27 0	.. 42 0
Jamaica	per cwt.	33 0	.. 58 0	36 0	.. 53 0
IPECACUANHA	per lb.	4 10	.. 5 0	5 9	.. 0 0
ISINGLASS, Brazil..	per lb.	2 8	.. 4 5	2 4	.. 4 3
Tongue sort	per lb.	3 3	.. 5 2	3 2	.. 4 8
East India	per lb.	1 0	.. 4 3	1 4	.. 4 0
West India	per lb.	3 11	.. 4 3	3 9	.. 4 0
Russ. long staple ..	per lb.	8 0	.. 11 6	6 0	.. 9 6
leaf	per lb.	9 6	.. 7 6	3 6	.. 6 0
Simovia	per lb.	2 0	.. 3 6	2 0	.. 3 6
JALAP, good	per lb.	1 3	.. 2 6	1 8	.. 3 2
infer. & stems	per lb.	0 6	.. 1 8	0 6	.. 1 7
LEMON JUICE	per degree	0 1	.. 0 1½	0 1	.. 0 0
LIQUORICE, Spanish per cwt.	per cwt.	35 0	.. 37 0	35 0	.. 37 0
Italian	per cwt.	40 0	.. 60 0	40 0	.. 60 0
MANNA, flaky	per lb.	3 3	.. 3 6	3 6	.. 4 0
small	per lb.	1 10	.. 2 0	2 0	.. 2 2
MUSK, Pod	per oz.	19 0	.. 45 0	21 0	.. 35 0
Grain	per oz.	50 6	.. 60 0	0 0	.. 0 0
OILS (see also separate List)					
Almond, expressed per lb.	per lb.	1 0	.. 0 0	1 2	.. 0 0
Castor, 1st pale	per lb.	0 5	.. 0 0	0 4½	.. 0 5½
second	per lb.	0 4½	.. 0 4½	0 4½	.. 0 4½
infer. & dark	per lb.	0 4½	.. 0 0	0 4	.. 0 4½
Bombay (in casks)	per lb.	0 4½	.. 0 4½	0 4	.. 0 4½
Cod Liver	per gall.	3 6	.. 5 6	5 0	.. 6 0
Croton	per oz.	0 3	.. 0 4	0 3½	.. 0 4½
Essential Oils:					
Almond	per lb.	35 0	.. 0 0	42 0	.. 0 0
Anise-seed	per lb.	9 3	.. 0 0	9 6	.. 0 0
Bay	per cwt.	65 0	.. 70 0	65 0	.. 70 3
Bergamot	per lb.	8 9	.. 15 0	8 0	.. 15 0
Cajoput, (in bond) per oz.	per oz.	0 1½	.. 0 3	0 2	.. 0 0
Caraway	per lb.	5 6	.. 6 3	5 6	.. 6 3
Cassia	per lb.	6 3	.. 0 0	4 2	.. 0 0
Cinnamon	per oz.	1 0	.. 5 0	1 0	.. 3 6
Cinnamon-leaf..	per lb.	0 2	.. 0 5	0 2	.. 0 6

1872.				1871.				1872.				1871.			
Essential Oils, continued:—								Oils, continued:—							
	s.	d.		s.	d.				£	s.		£	s.		
Citronelle per oz.	0	2½	to	0	0	0	17½	to	0	0		35	0	to	0
" " " " " "	0	2½		0	0	0	2½		0	0		35	0	to	0
Clove per lb.	4	0		0	0	2	4		0	0		37	0		33
Juniper "	1	0		2	0	1	9		2	0		32	0		31
Lavender "	3	0		6	0	3	0		6	0		28	10		0
Lemon "	10	0		18	0	5	0		0	0		46	10		0
Lemongrass per oz.	0	5		0	0	0	2½		0	2½		45	0		0
Neroli "	0	5		0	6	0	5		0	6		43	10		49
Nutmeg "	0	7		0	8	0	4		0	0½		43	0		48
Orange per lb.	7	0		8	0	5	0		7	0		45	0		0
Otto of Roses per oz.	12	0		21	0	12	0		21	0		45	0		0
Patchouli "	4	0		4	3	3	0		0	0		35	0		30
Peppermint:												31	0		35
American per lb.	13	0		14	0	15	6		17	0		0	0		0
English "	30	0		33	0	33	0		34	0		0	0		0
Rosemary "	1	9		2	0	1	9		2	0		43	0		44
Sassafras "	3	0		3	6	3	0		3	6		37	0		0
Spearmint "	4	0		16	0	4	0		16	0		32	10		32
Thyme "	1	10		2	0	1	10		2	0		43	0		0
Maço, expressed .. per oz.	0	1½		0	3	0	1½		0	3		41	0		41
Opium, Turkey per lb.	20	0		22	0	22	0		23	0		46	0		0
inferior "	12	0		19	0	14	0		21	0		41	10		0
QUASSIA (bitter wood) per ton	67	6		90	0	60	0		70	0		29	0		35
RHUBARB, China, good and												52	0		54
fine per lb.	2	3		6	0	2	0		6	4		35	0		0
Good, mid. to ord. "	0	3		2	0	0	3		1	9		39	0		0
Dutch trimmed "	9	0		9	6	0	0		0	0		0	0		0
Russian "	0	0		0	0	0	0		0	0		0	0		0
ROOTS—Calumba per cwt.	23	0		40	0	25	0		42	0		57	0		58
China "	23	0		23	0	22	0		24	0		0	0		0
Galangal "	16	0		19	0	17	0		0	0		44	0		45
Gentian "	20	0		22	0	27	0		30	0		0	0		0
Hellebore "	30	0		32	0	30	0		35	0		44	0		45
Orris "	47	0		70	0	65	0		80	0		0	0		0
Pellitory "	27	0		38	0	58	0		60	0		59	6		00
Pink per lb.	0	9		1	3	0	9		1	3		62	0		63
Rhatany "	0	4		0	11	0	5		0	11		63	6		0
Seneca "	4	0		4	6	3	9		4	0		57	0		58
Snake "	1	2		0	0	1	4		1	6		0	0		0
SAFFRON, Spanish "	27	0		38	0	35	0		44	0		9	0		9
SALEP per cwt.	170	0		290	0	110	0		240	0		9	0		9
SARSAPARILLA, Lima per lb.	0	7½		0	9	0	6		0	7½		0	0		0
Para "	1	2		1	3	1	0		1	3		0	0		0
Honduras "	1	2		1	8½	1	2		1	7½		0	0		0
Jamaica "	1	7		2	11	1	7		3	0		0	0		0
SASSAFRAS per cwt.	0	0		0	0	0	0		0	0		0	0		0
SCAMMONY, Virgin per lb.	26	0		32	0	25	0		29	0		0	0		0
second & ordinary "	10	0		25	0	10	0		23	0		0	0		0
SENA, Bombay "	0	2½		0	5	0	3½		0	0		0	0		0
Tiumivelly "	0	3		1	3	0	3½		1	6		0	0		0
Alexandria "	0	3½		1	7	0	3½		1	7		0	0		0
SPERMACEIN, refined .. "	1	6		0	0	1	6		1	7		0	0		0
American "	1	2		1	3	1	2		1	3		0	0		0
SQUILL "	0	1		0	2	0	1½		0	2		0	0		0
GUMS.															
AMMONIAC drop .. per cwt.	140	0		290	0	80	0		150	0		0	0		0
lump .. "	80	0		130	0	55	0		75	0		0	0		0
ANIMI, fine washed "	280	0		330	0	260	0		335	0		0	0		0
boldscraped "	220	0		280	0	210	0		270	0		0	0		0
sorts "	140	0		230	0	140	0		230	0		0	0		0
dark "	90	0		139	0	80	0		130	0		0	0		0
ARABIO, E. I., fine															
pale picked "	70	0		84	0	60	0		72	0		0	0		0
arts, gd. to fin. "	00	0		69	0	52	0		65	0		0	0		0
garblings .. "	23	0		50	0	22	0		40	0		0	0		0
TURKEY, pick. gd to fin. "	160	0		230	0	100	0		200	0		0	0		0
second & inf. "	85	0		150	0	85	0		155	0		0	0		0
in sorts "	65	0		80	0	65	0		80	0		0	0		0
Gedda "	30	0		42	0	33	0		44	0		0	0		0
BARBARY, white "	50	0		55	0	0	0		0	0		0	0		0
brown "	30	0		44	0	45	0		48	0		0	0		0
AUSTRALIAN "	29	0		45	0	22	0		41	0		0	0		0
ASSAFETIDA, com. to gd. "	75	0		100	0	30	0		100	0		0	0		0
BENJAMIN, 1st qual. "	200	0		520	0	160	0		400	0		0	0		0
2nd "	150	0		210	0	150	0		210	0		0	0		0
3rd "	67	0		90	0	40	0		85	0		0	0		0
COPAL, Angola red "	140	0		147	6	125	0		130	0		0	0		0
Bonguela "	110	0		115	0	95	0		110	0		0	0		0
Sierra Loono per lb.	0	3½		0	11	0	2½		0	10½		0	0		0
Manilla per cwt.	21	0		39	6	17	0		40	0		0	0		0
DAMMAR, pale "	55	0		60	0	05	0		70	0		0	0		0
EUPHORBUM "	15	0		17	0	10	0		0	0		0	0		0
GALBANUM "	200	0		250	0	200	0		260	0		0	0		0
GAMBOGE, pickd. pipe "	270	0		310	0	270	0		320	0		0	0		0
GUAIACUM per lb.	0	8		2	8	0	9		2	10		0	0		0
KINO per cwt.	50	0		85	0	00	0		100	0		0	0		0
KOWRIE, rough "	30	0		40	0	16	0		35	0		0	0		0
scraped "	40	0		95	0	37	0		75	0		0	0		0
MASTIO, pickd. per lb.	0	0		7	0	5	6		7	0		0	0		0
MYRRH, gd. & fine per cwt.	120	0		290	0	120	0		100	0		0	0		0
sorts "	78	0		115	0	80	0		110	0		0	0		0
OLIBANUM, p. sorts															
amber & ylw. "	74	0		78	0	70	0		75	0		0	0		0
garblings "	08	0		73	0	62	0		07	0		0	0		0
SENEGAL per cwt.	70	0		80	0	19	0		43	0		0	0		0
SANDARAC "	55	0		100	0	07	0		85	0		0	0		0
SHELLAC, Orange "	140	0		157	6	135	0		150	0		0	0		0
Iiver "	125	0													

